Appendix E

Transportation Impact Study

- Transportation Impact Study
- Transportation Impact Study Technical Appendices

December 19, 2014

San Francisco VA Medical Center Long Range Development Plan

Transportation Impact Study (TIS)

Prepared for the Department of Veterans Affairs

San Francisco VA Medical Center
Long Range Development Plan
Transportation Impact Study (TIS)

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December 19, 2014

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1.0 Introduction

This chapter provides an overview of the study and describes the existing transportation conditions in the vicinity of the Project site.

1.1 Study Context

This analysis has been conducted to assess the potential transportation impacts associated with the implementation of the Long Range Development Plan (LRDP)(1) for the San Francisco Veterans Affairs Medical Center (SFVAMC) Fort Miley Campus, herein referred to as the "Project." This Transportation Impact Study (TIS) has been prepared to support the LRDP's Supplemental Draft Environmental Impact Statement (EIS), the environmental review document currently being prepared for the Project in accordance with the National Environmental Policy Act (NEPA).

This TIS addresses the following transportation topics in relation to the Project:

- Traffic conditions
- Transit conditions
- Pedestrian conditions
- Bicycle conditions
- Parking conditions
- Freight loading conditions
- Emergency vehicle access conditions
- Construction conditions

1.2 Project Location

SFVAMC facilities are currently located at a single campus at 4150 Clement Street in the Outer Richmond District in northwestern San Francisco, California, a location known as the "Fort Miley Campus" (herein referred to as the "Campus"), because of its location within the original Fort Miley Military Reservation. The Campus is a 29-acre site bounded on the north, east, and west sides by National Park Service lands (part of the Golden Gate National Recreation Area [GGNRA] and known colloquially as "Lands End") and on the south by Clement Street, with access points at 42nd Avenue/Clement Street and 43rd Avenue/Clement Street. Lincoln Park, operated by the San Francisco Recreation and Parks Department, is also located to the north and east of the Campus adjacent to the GGNRA lands. The location of the Campus is illustrated in Figure 1.

The EIS considers development scenarios at both the existing SFVAMC Campus at Fort Miley and an undetermined site within the Mission Bay area of San Francisco (the "Mission Bay Campus"). Potential sites for the Mission Bay Campus would likely include unoccupied buildings or undeveloped blocks within the Mission Bay South redevelopment area or in the surrounding area just west along 16th Street or Seventh Street, although the exact location has yet to be determined.(2) For the purposes of this study, it is assumed that a potential new Mission Bay Campus could be located within the area bounded by Interstate 80 (I-80), Seventh Street, and Brannan Street on the north; Second Street and San Francisco Bay on the east; Cesar Chavez Street on the south; and Potrero Avenue on the west.

(1) San Francisco Veterans Affairs Medical Center Fort Miley Campus Long Range Development Plan (January 31, 2014).

(2) The U.S. Department of Veterans Affairs (VA) signed a 10-year lease for 42,000 square feet of research space at 1700 Owens Street in the Mission Bay South redevelopment area in 2012, adjacent to the J. David Gladstone Institutes and close to the growing University of California, San Francisco (UCSF) Mission Bay Campus. The space is intended for use by the Northern California Institute for Research and Education (NCIRE)–The Veterans Health Research Institute, but the details of any further expansion of SFVAMC operations into the Mission Bay area in the future are uncertain at this time.

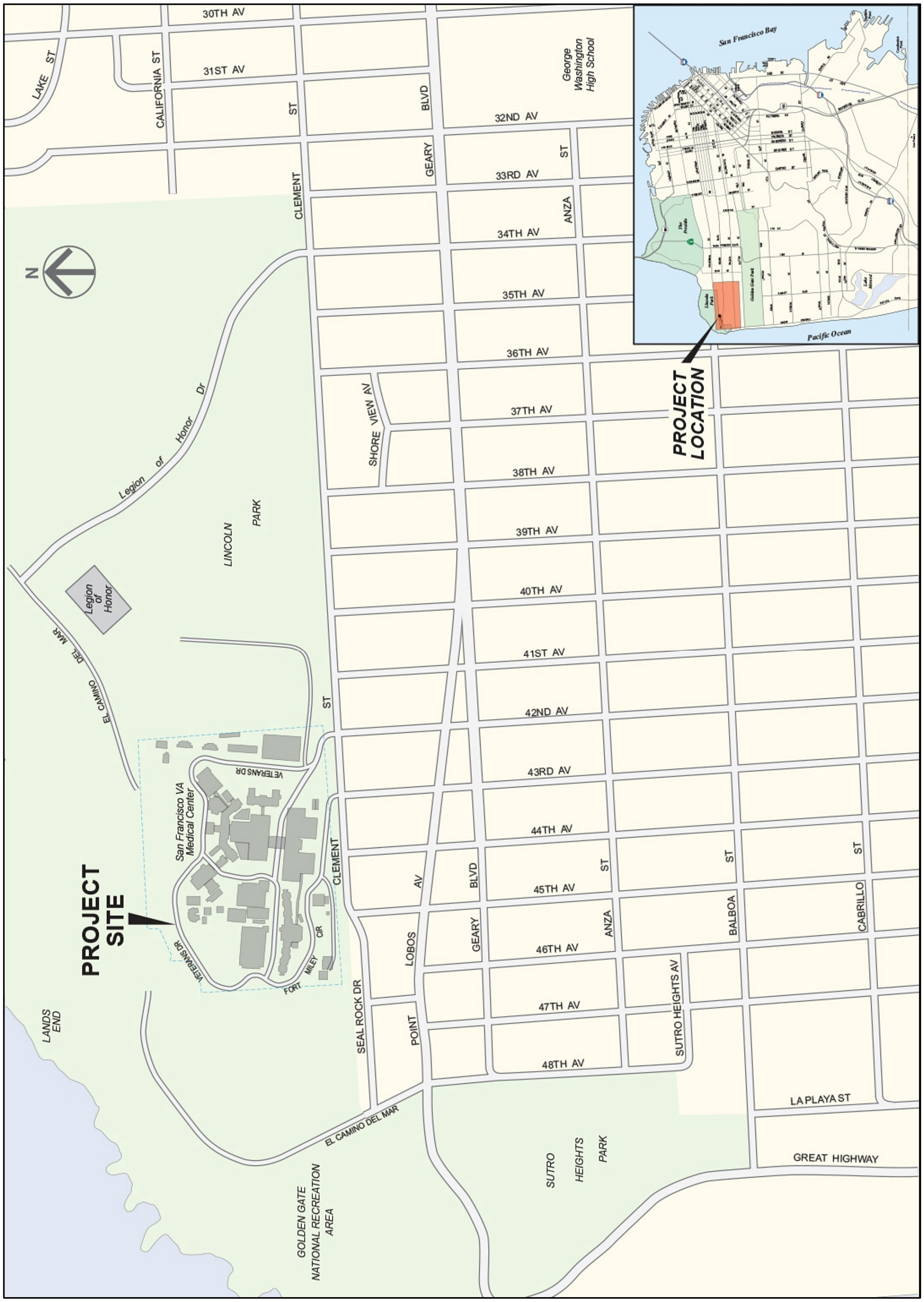

Figure 1: Project Location

1.3 Project Description

The LRDP describes a series of Campus improvements to be undertaken by SFVAMC to accommodate the growing medical needs of Veterans in the Bay Area and Northern California through to a horizon year of 2030, and includes development of new facilities, enhancement of existing facilities, and seismic retrofitting of existing buildings and structures. The development program encompasses a wide variety of medical-related uses including patient care, research, education, administration/office, and hoptel[3] uses, as well as ancillary needs such as parking facilities.

1.3.1 Description of Alternatives

As described in Section 2.3 of the San Francisco Veterans Affairs Medical Center Long Range Development Plan Supplemental Draft Environmental Impact Statement (December 19, 2014), three development alternatives and a fourth, “no action” alternative have been analyzed in the environmental review of the LRDP, defined as follows:

- Alternative 1: SFVAMC Fort Miley Campus Buildout Alternative 1 (Preferred Alternative)
  Alternative 1 proposes 554,452 gross square feet of net new development at the Campus, along with seismic upgrades to various existing structures on the Campus in one short-term phase (Phase 1) and one long-term phase (Phase 2). In terms of habitable building inventory, Alternative 1 proposes 386,300 square feet of new construction and demolition of 64,100 square feet in existing facilities, resulting in 322,200 gross square feet of net new development.

- Alternative 2: SFVAMC Fort Miley Campus Buildout Alternative 2
  Alternative 2 is identical to Alternative 1 in terms of the total amount and type of operational space proposed, but would involve different phasing and implementation schedules for some components of the LRDP, resulting in a different, longer construction schedule.

- Alternative 3: SFVAMC Fort Miley Campus Plus Mission Bay Campus Alternative
  Alternative 3 retains all of the short-term (Phase 1) components of Alternative 1 at the Fort Miley Campus, but would locate all of the long-term (Phase 2) components off Campus at an unknown site, to be determined and purchased later by VA, within the Mission Bay area of San Francisco (the “potential Mission Bay Campus”).

- Alternative 4: No Action Alternative
  Alternative 4 assumes that the LRDP would not be implemented, and is analyzed here to allow decision makers to compare the impacts of the action alternatives (Alternative 1, Alternative 2, and Alternative 3) against the impacts of no action in the future.

As a supporting document to the EIS, this study also assesses these four alternatives in the evaluation of the Project and its potential transportation impacts.

1.3.2 Development Program and Phasing

As described in the LRDP, SFVAMC has developed two options, Alternative 1 and Alternative 2, for meeting forecasted space needs (589,000 gross square feet) at the Fort Miley Campus alone. These two alternatives would be equivalent in terms of gross square footage, building locations, and planned building function in the LRDP horizon year (2030); however, they would have different construction phasing plans, schedules, and temporary modular swing-space programs.

Table 1 summarizes the LRDP development program for Alternative 1 and Alternative 2, presenting details on the proposed action, square footage, phasing, construction schedule, and changes to on-site parking supply at the Campus for each LRDP subphase. Table 2 summarizes the same data for Phase 2 of Alternative 3. Phase 1 under Alternative 3 would be identical to Phase 1 under Alternative 1 and has, therefore, been omitted.

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(3) A hoptel is an overnight, shared lodging facility for eligible Veterans receiving healthcare services. This temporary lodging is available to Veterans who need to travel 50 or more miles from their homes to the Campus.

Table 1: LRDP Development Program (Alternative 1 and Alternative 2)

Building	Action [1]	Gross Area[2] (square feet)		Alternative 1						Alternative 2					
				Subphase	Parking Change[3] (spaces)			Construction Schedule		Subphase	Parking Change[3] (spaces)			Construction Schedule	
					Temporary		Perma-nent				Temporary		Perma-nent		
		New	Demo-lition		Loss	Gain	Gain	Start	End		Loss	Gain	Gain	Start	End
Building 211: Emergency Operations Center/Parking Garage	C	5,000		1.1	(277)	180[4]	200	07/2013	07/2014	1.1	(277)	180[4]	200	07/2013	07/2014
Trailer 17	R		(1,700)	1.2				12/2013	01/2014	1.2				12/2013	01/2014
Building 41: Research	C	14,200						01/2014	03/2015					01/2014	03/2015
Buildings 5 and 7	S			1.3				03/2014	05/2015	1.3				03/2014	05/2015
Buildings 9 and 10	S			1.4				03/2014	05/2015	1.4				03/2014	05/2015
Building 22: Hoptel	C	8,700						03/2014	05/2015					03/2014	05/2015
Buildings 209 and 211: Parking Garage Extensions	C			1.5	(29)	--	250	03/2015	03/2016	1.5	(29)	--	250	03/2015	03/2016
Building 203: C-Wing Extension (Ground-Floor Patient Welcome Center)/Drop-Off Area with Canopy Structure	C	7,100		1.6				06/2015	08/2016	1.6				06/2015	08/2016
Building 200: Expansion (Operating Room D-Wing)	C	5,300		1.7				06/2015	06/2016	1.7				06/2015	06/2016
Building 20	D		(2,300)	1.8				08/2015	09/2015	1.8				08/2015	09/2015
Building 24: Mental Health Clinical Expansion	C	15,600						09/2015	10/2016					09/2015	10/2016
Building 18	D		(9,700)	1.9				09/2015	12/2015	1.9				09/2015	12/2015
Building 14	D		(6,400)					09/2015	12/2015					09/2015	12/2015
Building 21	D		(1,700)					09/2015	12/2015					09/2015	12/2015
Trailer 23	R		(900)					09/2015	12/2015					09/2015	12/2015
Structure 206: Water Tower	I							09/2015	12/2015					09/2015	12/2015
Structure 206: Water Tower	R							09/2015	12/2015					09/2015	12/2015
Building 40: Research	C	110,000						12/2015	12/2018					12/2015	09/2018
Building 207: Expansion (IT Support Space)	C	7,000		1.10				11/2015	01/2017	1.10				11/2015	01/2017
Trailer 31	R		(1,500)	1.11				11/2015	12/2015	1.11				11/2015	12/2015
Building 43:Research and Admin.	C	15,000						12/2015	02/2017					12/2015	02/ 2017
Trailer 36: New Modular	I	2,200		1.12				06/2016	09/2016	1.12				06/2016	09/ 2016
Building 23: Mental Health Research Expansion	C	15,000		1.13				10/2016	12/2017	1.13				10/2016	12/2017
Building 203: Extension (Psychiatric Intensive Care Unit C-Wing)	C	1,200		1.14				12/2016	06/2018	1.14				12/2016	06/2018
Trailer 24	R		(1,000)	1.15				12/2016	02/2017	1.15				12/2016	02/ 2017
Building 208: Extension (Community Living Center/National Cardiac Device Surveillance Center)	C	10,000						02/2017	08/2018					02/2017	08/2018
Building 8	S			1.16				07/2017	03/2019	2.1				10/2020	12/2021
Building 1	S									2.2				10/2020	06/2022
Building 6	S									2.3				06/2022	02/2024
Building 12	D		(38,900)	1.17	(23)	--	--	09/2019	08/2020	1.16	(23)	--	--	11/2018	10/2019
Building 213: Clinical Addition Building	C	170,000		2.1				03/2024	03/2026	2.4				03/2024	03/2026
Total		386,300	(64,100)					07/2013	03/2026					07/2013	03/2026
Temporary Modular Swing Space[5]		60,000			(102)	--	--	04/2016	03/2019					09/2020	02/2024

Source: VA, 2014b; Data compiled by AECOM in 2014

Notes:
IT = information technology
(1) Actions: D = Demolition; S = Seismic Retrofit; C = Construction; R = Removal; I = Installation
(2) Gross area shown only for habitable spaces; gross area of parking facilities and other nonhabitable buildings and structures is not shown.
(3) Changes to on-site parking capacity shown only for the associated subphase in which the change first occurs.
(4) Temporary valet parking to be in effect until the end of Subphase 1.9.
(5) The construction schedule cited for swing space represents the full period of time that the parking loss would be in effect, and accounts for installation, (temporary) operation, and removal of the modular structures. Swing space for Alternative 1 would be situated in four different locations as indicated in Figure 3-2 of the Long Range Development Plan (LRDP):

- Parking Lot B
- Near Parking Lot K
- At Temporary Structure T-31 (Home-Based Primary Care), near Building 4 (Research/Administration)
- West of the Patient Welcome Center, between Building 200 and Building 203

Swing space for Alternative 2 would be situated at the location of the current Building 12 and future Building 213, as indicated in Figure 3-6 of the LRDP.

Table 2: LRDP Development Program (Alternative 3, Phase 2)

Building	Action	Gross Area[1] (square feet)		Construction Schedule	
		New	Net New	Start	End
Ambulatory Care Center	Construction	140,000	140,000	01/2024	12/2025
Clinical Parking Garage (100 spaces)	Construction			01/2026	12/2027
Total		140,000	140,000	01/2024	12/2027

Source: Data compiled by AECOM in2014

Notes:
(1) Gross area shown only for habitable spaces; gross area of parking facilities and other nonhabitable buildings and structures is not shown.

As shown in Table 1, short-term (Phase 1) components under each of the action alternatives are expected to be completed by 2019 or 2020, and long-term (Phase 2) components are expected to be completed by 2026 (Alternative 1 and Alternative 2) or 2027 (Alternative 3). Differences between Alternative 1 and Alternative 2 are related to the following:

- Expected finish date of Building 40 (Research): December 2018 under Alternative 1, but September 2018 under Alternative 2;
- Phasing of the seismic retrofits of Building 1, Building 6, and Building 8: Short-term (Phase 1) projects under Alternative 1, but long-term (Phase 2) projects under Alternative 2;
- Expected start and finish dates of the demolition of Building 12: September 2019 to August 2020 under Alternative 1, but November 2018 to October 2019 under Alternative 2; and
- Phasing and siting of temporary modular swing space: April 2016 to March 2019 at four locations under Alternative 1, but September 2020 to February 2024 at a single location under Alternative 2.

Specifically, under Alternative 1, there would be a 3- to 4-year hiatus in construction activities between completion of Phase 1 projects and implementation of Phase 2 projects. Under Alternative 2, however, the seismic retrofits of Building 1, Building 6, and Building 8 would be defined as long-term projects, reducing the hiatus in construction activities to approximately 1 year. As stated previously, however, Alternative 1 and Alternative 2 are identical in almost all aspects relevant to their analysis in this transportation study, and distinctions hereafter are made only when discussing construction impacts.

1.3.3 Site Access and Circulation

Because the LRDP EIS is intended only as a programmatic environmental review of the LRDP, the specific design details of each LRDP component have yet to be fully defined. As specific LRDP components (such as new buildings and structures) move forward into the design and implementation phase, they will undergo subsequent project-level environmental review, as needed. These supplemental environmental documents may be in the form of a project-level EIS, Environmental

Assessment (EA), or Categorical Exclusion (CE), during which site-specific issues such as access and circulation for the various transportation modes would be evaluated in detail. As such, evaluation of access and circulation issues for the LRDP was conducted at the area wide level, and it is assumed that site-specific evaluations for each LRDP component would be conducted, if determined necessary, during project-level environmental reviews.

In addition, because a specific location has yet to be identified for the potential extension campus at Mission Bay under Alternative 3, this study evaluates access and circulation issues as they relate to the LRDP for the Fort Miley Campus only. It is assumed that access and circulation issues for the Mission Bay Campus would be evaluated as part of subsequent environmental review to be conducted if and when a specific site in Mission Bay is identified.

The existing Campus circulation system and the proposed Campus circulation under the LRDP are illustrated in Figure 2 and Figure 3, respectively. Access and circulation for each of the various transportation modes at the Fort Miley Campus under the LRDP is described in detail in the following subsections.

Roadway Access

The existing access points to and from the Campus at 42nd Avenue/Clement Street and 43rd Avenue/Clement Street would remain unchanged with implementation of the LRDP, and Veterans Drive and Fort Miley Circle would continue to serve as the primary circulation and collector roads within the Campus. The LRDP would, however, propose several changes to the function of these access points, as well as to internal circulation within the Campus, as illustrated in Figure 3.

In particular, the LRDP proposes to create a new Patient Welcome Center and healing garden between Building 200 (Ambulatory Care/Clinical Support) and Building 203 (Inpatient Hospital/Diagnostics/Specialty Care). As part of this change, the eastern segment of Fort Miley Circle would terminate at its western end at the Patient Welcome Center, with a new traffic circle designed to enhance the efficiency of patient and visitor pick-up and drop-off activities. This change is also part of a reorganization of the Campus into two distinct “zones,” an effort to rationalize circulation through the site and enhance the user experience:

- An “employee zone” would cover the northern and northwestern portions of the Campus, including the main parking structures (Building 209 and Building 211). Primary external access would be provided via the Campus’s 43rd Avenue entrance, serving both employees and service/delivery vehicles.

- A “Veteran/visitor zone” would cover the central, southern, eastern, and northeastern portions of the Campus, including the new Patient Welcome Center, Building 200, Building 203, the hoptel, and Veteran/visitor parking facilities (Lot B and Building 212). Primary external access would be provided via the Campus’s 42nd Avenue entrance.

Gates would be installed along Veterans Drive to restrict access to (and within the vicinity of) the proposed new Building 40, effectively closing off the northwestern segment of Veterans Drive and other areas within the “employee zone” to nonemployee vehicles.

The LRDP also proposes to narrow the north–south roadway between Building 200 and the future Building 213 (Clinical Addition Building)—currently, Building 12 (Medical Research)—as part of a traffic calming measure and to secure adequate pedestrian access to the healing garden from the west. The LRDP would also convert Fort Miley Circle west of Building 203, currently one-way westbound, to two-way traffic.

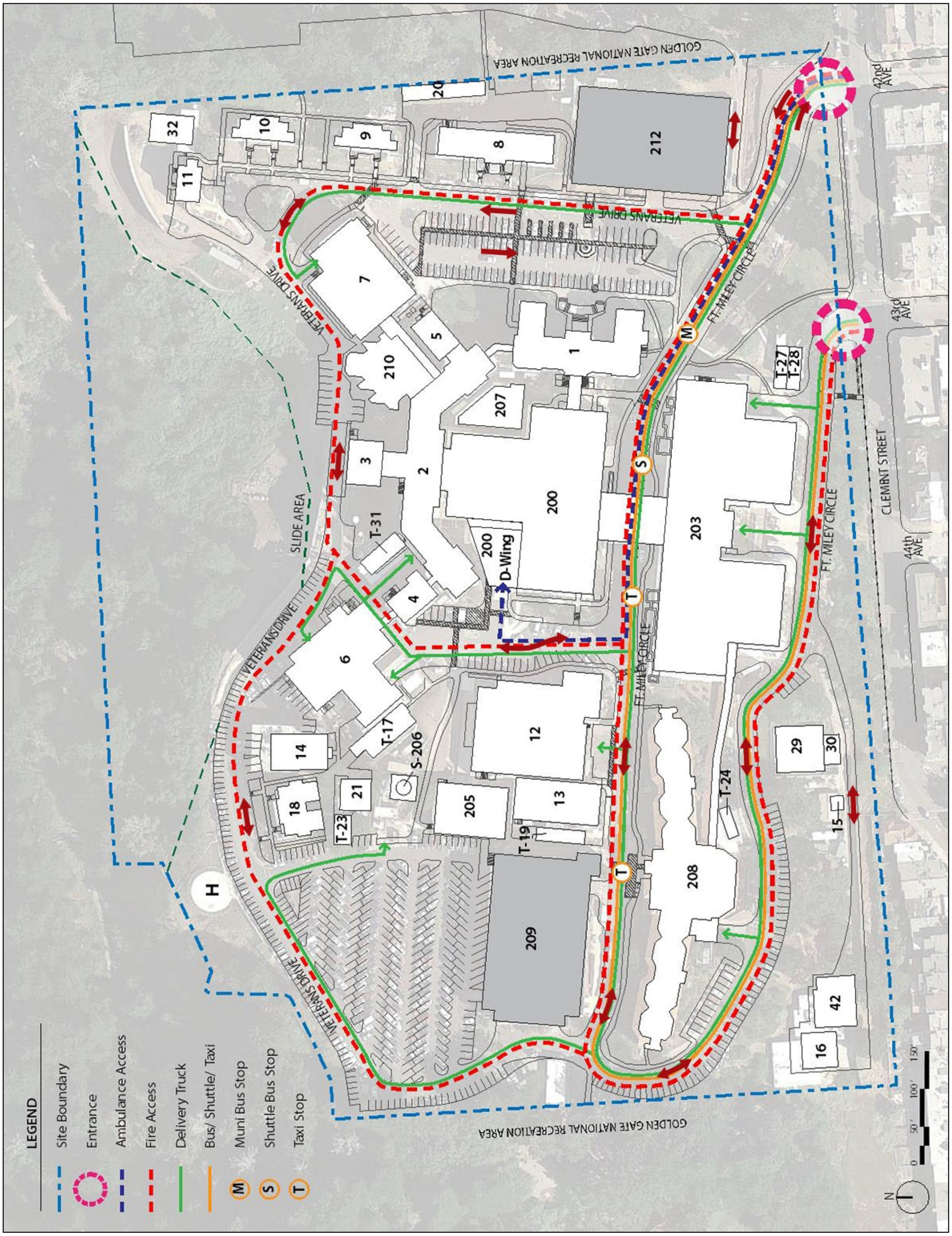

Figure 2: Existing Circulation System

Figure 3: Proposed Circulation System

Transit Access

Public Transit Access

The changes to the internal roadway network within the Campus described in the preceding subsection would also result in changes to transit access on the Campus. In particular, San Francisco Municipal Railway (Muni) buses traveling to the site on the 38 Geary's Fort Miley service currently enter via 42nd Avenue, terminating at a stop to the south of Building 1 (ORTC Clinic) before looping through the site via Fort Miley Circle to 43rd Avenue and continuing back inbound to Downtown San Francisco. Under the LRDP, the eastern segment of Fort Miley Circle would terminate at the new Patient Welcome Center, where a traffic circle would be constructed with a new terminus for Muni buses, which would now both enter and exit via 42nd Avenue, as shown in Figure 3.

Shuttle Access

In addition to Muni service, the Campus is currently served by several shuttle services to various local and regional destinations, with curb stops designated along Fort Miley Circle between Building 200 and Building 203. Under the LRDP, these stops would be relocated at two separate locations, as shown in Figure 3: one at the new traffic circle to the east of the Patient Welcome Center and one between Building 208 (Community Living Center/National Cardiac Device Surveillance Center) and Building 209. Shuttles currently access the Campus primarily via 42nd Avenue, but the changes proposed under the LRDP would provide shuttle services with the additional option of entering the Campus via 43rd Avenue, serving the designated stop between Building 208 and Building 209, and continuing north along Veterans Drive to loop through the site to reach 43rd Avenue. Shuttles entering from 42nd Avenue would stop at the new Patient Welcome Center traffic circle and have the option of returning to 42nd Avenue or looping north via Veterans Drive to reach 43rd Avenue.

Taxi Access

Taxi access under the LRDP would be similar to shuttle services, with stops provided both at the new traffic circle serving the Patient Welcome Center and at a separate location between Building 208 and Building 209, as shown in Figure 3.

Bicycle Access and Parking

The LRDP does not propose specific changes with regard to bicycle access on the Campus, and bicyclists would continue to be able to access the Campus as they currently do via the main access points at 42nd Avenue/Clement Street and 43rd Avenue/Clement Street. The LRDP does not provide specific details regarding future provision of bicycle parking or showers and lockers for bicycle users on the Campus, although SFVAMC currently provides bicycle lockers to Campus staff to encourage bicycle use. It is expected that specific details regarding the future provision of bicycle parking and other bicycle-related amenities will be determined as each specific LRDP component enters the design and implementation phase, and as such, would be analyzed in more detail in subsequent project-level environmental review.

Pedestrian Access

External access to and from the Campus for pedestrians would remain unchanged with implementation of the LRDP, with primary access routes via the existing Campus access points at 42nd Avenue/Clement Street and 43rd Avenue/Clement Street. Supplementary access to and from the Campus would continue to be provided along the northern segment of Veterans Drive via pedestrian trails connecting with Lands End. The LRDP proposes several general changes that would enhance pedestrian connectivity and the pedestrian realm within the Campus, such as narrowing the north–south roadway between Building 200 and the future Building 213 as part of a traffic calming measure. However, specific details regarding pedestrian access would be determined as each specific LRDP component moves forward to the design and implementation phase, and as such, would be analyzed in more detail in subsequent project-level environmental review.

Vehicle Parking

In terms of parking, the LRDP includes two construction projects related to on-site parking at the Campus, as indicated in Table 1:

- Building 211 (Emergency Operations Center/Parking Garage): As described in the LRDP, this project would involve construction of a new parking structure north of the existing Building 209 structure, increasing the net supply of parking on the Campus by approximately 200 spaces and serving additional duties as an emergency operations center for SFVAMC. Although included in the LRDP, this project was already approved in 2011 and construction is already under way.[4]

- Buildings 209 and 211 (Parking Garage Extensions): As described in the LRDP, this project would increase the net supply of parking on the Campus by approximately 250 spaces by expanding the existing Building 209 structure and under-construction Building 211 structure to the west over Veterans Drive.

Existing and future parking inventory on the Campus, as referenced from the LRDP, are summarized in Table 3.

Table 3: Existing and Future Campus Parking Inventory

Facility	Configuration	Existing[1]		Future[2]	
		Function/User	Capacity (spaces)	Function/User	Capacity (spaces)
Building 209	Structure	Employee/Visitor	422	Employee	588
Building 211	Structure	Under construction		Employee	461
Building 212	Structure	Patient	160	Patient/Visitor	160
Lot B	Surface lot	Patient/Visitor	102	Patient/Visitor	102
Lot C	Surface lot	Employee	13	Employee	13
Lot D	Surface lot	GSA/Employee	142	Employee	122
Lot E	Surface lot	Patient	23	Eliminated	
Lot F	Surface lot	Employee	2	Employee	2
Lot G	Surface lot	Employee	87	Employee	87
Lot H	Surface lot	Patient/Visitor	17	Eliminated	
Lot J	Surface lot	Employee	270	Employee	24
Lot K	Surface lot	Employee	7	Eliminated	
Lot L	Surface lot	Employee	8	Eliminated	
Total			1,253		1,559

Sources: VA, 2014b; Data compiled by AECOM in 2014

Notes:
GSA = General Services Administration.
(1) "Existing" reflects status as of 2012.
(2) Future parking inventory reflects approximate numbers.

As indicated in Table 3, the LRDP would concentrate patient parking in Lot B and Building 212 on the east side of the Campus, providing approximately 262 total spaces. Other facilities currently providing parking for patients and visitors (either exclusively or shared with employees) would generally be eliminated, such as Lot E and Lot H. Building 209 would be converted exclusively to employee use, although it already serves primarily employees, providing only a limited number of spaces for visitors. The LRDP would increase overall on-site parking capacity at the Campus by 306 spaces (from approximately 1,253 spaces to 1,559 spaces), with the two primary parking facilities on the Campus (Building 209 and Building 211) providing approximately 1,049 spaces exclusively for employee use.

Currently, SFVAMC is providing valet parking in Building 209 and Building 212 to alleviate the loss in on-site parking capacity as a result of current on-Campus construction activities. SFVAMC proposes to continue providing valet parking

(4) A Final EA (San Francisco Veterans Affairs Medical Center Parking and Emergency Response Structure, Project No. 662-611 Final Environmental Assessment and Response to Comments) was published on May 20, 2011, followed by a Finding of No Significant Impact (FONSI) (San Francisco Veterans Affairs Medical Center Parking and Emergency Response Structure, Project No. 662-611 Finding of No Significant Impact) on May 24, 2011.

through the end of construction of Subphase 1.9 to partially offset the temporary loss in parking capacity as specific subphases of the LRDP enter the implementation phase, and to reduce spillover effects into the surrounding neighborhood.

Freight Loading Access

The LRDP does not propose specific changes with regard to Campus access for freight loading and service/delivery vehicles. The LRDP would implement minor changes to site circulation as a result of the roadway changes proposed by the LRDP, which may affect how trucks and other service/delivery vehicles access specific facilities on the site. However, these vehicles would still be able to enter and exit the Campus via the existing access points at 42nd Avenue/Clement Street and 43rd Avenue/Clement Street, as illustrated in Figure 3. It is expected that specific details regarding the future provision of freight loading spaces, either curbside or in building docks, will be determined as each specific LRDP component enters the design and implementation phase, and as such, would be analyzed in more detail in subsequent project-level environmental reviews.

Emergency Vehicle Access

Fire Access
Campus access for San Francisco Fire Department (SFFD) vehicles would remain unchanged under the LRDP. Although the LRDP proposes minor changes to site circulation within the Campus, which may affect how fire engines and trucks access specific facilities on the site, fire engines and trucks would continue to be able to enter and exit the Campus via either 42nd Avenue or 43rd Avenue, as illustrated in Figure 3.

Emergency Medical Access
SFVAMC provides only limited emergency medical services. Ambulances currently access the Campus via 42nd Avenue and travel along Fort Miley Circle to reach their primary destination, Building 200, stopping along the west side of the building ("D" Wing). As shown in Figure 3, the LRDP proposes to redirect ambulances to the 43rd Avenue entrance but would not propose any other specific changes to ambulance access on the Campus.

1.4 Study Scope and Approach

1.4.1 Analysis Scenarios

The following analysis scenarios were evaluated to identify the potential transportation impacts of the Project:

- Existing Conditions
  Existing conditions, generally representing conditions in 2011.[5]

- 2020 Short-term Conditions

  - 2020 Near-term Alternative 1 Conditions
    Conditions in Year 2020 assuming implementation of the short-term actions for Alternative 1 of the Project.

  - 2020 Short-term Alternative 3 Conditions
    Conditions in Year 2020 assuming implementation of the short-term actions for Alternative 3 of the Project. As stated in Section 1.3.1, both Alternative 1 and Alternative 3 propose the same series of improvements in the short-term time frame; as a result, this scenario is identical to 2020 Short-term Alternative 3 Conditions.

  - 2020 Short-term Alternative 4 Conditions
    Conditions in Year 2020 without the Project.

[5] A Notice of Intent (NOI) to prepare an EIS for the San Francisco Veterans Affairs Medical Center Institutional Master Plan was issued on October 12, 2010 and published in the Federal Register on March 30, 2011 (Vol. 76, No. 61), marking the commencement of the transportation analysis described in this study.

- 2027 Long-term Conditions
    - 2027 Long-term Alternative 1 Conditions
      Conditions in Year 2027 assuming implementation of the short-term and long-term actions for Alternative 1 of the Project.
    - 2027 Long-term Alternative 3 Conditions
      Conditions in Year 2027 assuming implementation of the short-term and long-term actions for Alternative 3 of the Project.
    - 2027 Long-term Alternative 4 Conditions
      Conditions in Year 2030 without the Project.
- 2040 Cumulative Conditions
    - 2040 Cumulative Alternative 1 Conditions
      Conditions in Year 2040 assuming implementation of the short-term and long-term actions for Alternative 1 of the Project.
    - 2040 Cumulative Alternative 3 Conditions
      Conditions in Year 2040 assuming implementation of the short-term and long-term actions for Alternative 3 of the Project.
    - 2040 Cumulative Alternative 4 Conditions
      Conditions in Year 2040 without the Project.

As described in Section 1.3.1, Alternative 4 represents the "no action" alternative, and is analyzed in this study and the EIS to facilitate the determination of Project impacts in the short-term, long-term, and cumulative time frames.

As described in Section 1.3.2, Alternative 1 and Alternative 2 are identical in operational buildout aspects relevant to their analysis in this transportation study; as a result, Alternative 2 has primarily been analyzed with respect to differences in construction impacts compared to Alternative 1. These impacts are discussed alongside the construction impacts of Alternative 1 in Section 3.3.8 (short-term impacts), Section 4.3.8 (long-term impacts), and Section 5.3.8 (cumulative impacts).

1.4.2 Analysis Topics

The following subsections describe the general analysis scope for each of the transportation topics. As discussed previously, evaluation of these topics in relation to the Project focuses primarily on the Fort Miley Campus, as a specific location and detailed facilities plan for the potential new Mission Bay Campus have yet to be determined. It is assumed that these topics will be analyzed in further detail in a subsequent environmental review once more details regarding the Mission Bay Campus have been determined.

Given the context of the Project site within the City and County of San Francisco, applicable local and regional standards and methodologies have been applied where feasible in the analysis of the Project, such as use of the San Francisco Planning Department's Transportation Impact Analysis Guidelines for Environmental Review (October 2002) (SF Guidelines). It should be noted, however, that the Project is a federal action and not generally subject to policies or guidelines established at the local, regional, and State levels.

Traffic Conditions

The scope of the analysis of traffic conditions considers intersections, roadway segments, and passenger vehicle access.

Intersections

Traffic operations were analyzed at the following five study intersections in the vicinity of the Campus where the Project could potentially affect operations:

1. 34th Avenue/Clement Street
2. 42nd Avenue/Clement Street
3. 43rd Avenue/Clement Street
4. 42nd Avenue/Point Lobos Avenue
5. 43rd Avenue/Point Lobos Avenue

Consistent with the standard methodology for intersection analysis as recommended in the SF Guidelines, the study intersections were analyzed for the weekday p.m. peak hour, defined as the peak one hour (four consecutive 15-minute intervals) of the weekday p.m. peak period (4:00 p.m. to 6:00 p.m.). The weekday p.m. peak hour is the recommended analysis period for intersection analysis according to the SF Guidelines.

Intersections were analyzed according to the 2000 Highway Capacity Manual (HCM) methodology, which is based on the Level of Service (LOS) concept, a qualitative description of the performance of an intersection based on average delay per vehicle.[6] For intersections with signal control, intersection LOS and delay are reported as an average across all movements and approaches. For intersections with one-way or two-way stop control, intersection LOS and delay are typically reported for the worst stop-controlled approach (or yield movement), and for intersections with all-way stop control, intersection LOS and delay are typically reported as an intersection average (all movements and approaches), similar to intersections with signal control.

Intersection LOS ranges from LOS A, which indicates free flow or excellent conditions with short delays, to LOS F, which indicates congested or overloaded conditions with extremely long delays. In San Francisco, LOS A through LOS D are considered excellent to satisfactory levels of service, and LOS E and LOS F represent unacceptable levels of service. The LOS criteria for intersections are summarized in Table 4.

Table 4: Level of Service Criteria for Intersections

LOS	Description	Average Delay (seconds/vehicle)	
		Signalized Intersections	Unsignalized Intersections
A	Little or no delay	≤ 10.0	≤ 10.0
B	Short traffic delay	> 10.0 and ≤ 20.0	> 10.0 and ≤ 15.0
C	Average traffic delay	> 20.0 and ≤ 35.0	> 15.0 and ≤ 25.0
D	Long traffic delay	> 35.0 and ≤ 55.0	> 25.0 and ≤ 35.0
E	Very long traffic delay	> 55.0 and ≤ 80.0	> 35.0 and ≤ 50.0
F	Extreme traffic delay	> 80.0	> 50.0

Note: LOS = level of service
Source: TRB, 2000.

It should be noted that delay for intersections operating at LOS F is typically reported as “greater than 80.0 seconds” for signalized intersections and “greater than 50.0 seconds” for unsignalized intersections, as 80.0 seconds and 50.0 seconds are generally considered the limits of the meaningful range for the analysis methodology for signalized and unsignalized intersections.

(6) As part of the HCM methodology, adjustments are typically made to the capacity of each intersection to account for various factors that reduce the ability of the streets to accommodate vehicles (such as the downtown nature of the area, number of pedestrians, vehicle types, lane widths, grades, on-street parking, and queues). These adjustments are made to ensure that the LOS analysis results reflect the actual operating conditions observed in the field.

Roadway Segments

In addition to intersections, traffic operations were also analyzed at the following two mid-block roadway segments in the vicinity of the Campus where the Project could potentially affect operations:

1. 42nd Avenue between Clement Street and Point Lobos Avenue
2. 43rd Avenue between Clement Street and Point Lobos Avenue

The roadway segment analysis is based on the calculation of volume-to-capacity (v/c) ratios for each of the study roadway segments. Although the ultimate lane capacity depends on any number of factors such as signal timing and phasing, traffic volumes on conflicting movements, and pedestrian activity, a capacity of about 600 vehicles per hour (vph) per lane is typically assumed for closely spaced, signalized intersections in a dense, developed urban setting, based on guidance from the Highway Capacity Manual for highways.(7) In keeping with their function as two-lane residential collector streets with low free-flow speeds (25 miles per hour) and primarily featuring stop control, however, 42nd Avenue and 43rd Avenue could be expected to have a slightly lower capacity compared to a signalized intersection on an arterial roadway in a more congested setting. As a result, a capacity of 450 vph has been assumed for the purposes of this roadway segment analysis.(8)

The calculated v/c ratios were then compared against the criteria summarized in Table 5 to determine the reported LOS.

Table 5: LOS Criteria for Roadway Segments

LOS	Description	v/c Ratio
A	Vehicles travel at free-flow speeds and can maneuver almost freely within the traffic stream.	≤ 0.30
B	Vehicles travel at free-flow speeds and movement within the traffic stream is only slightly restricted.	> 0.30 and ≤ 0.50
C	Vehicles travel at or near free-flow speed and movement is somewhat restricted. Incidents can cause local queuing.	> 0.50 and ≤ 0.70
D	Vehicle speed declines as density increases, and maneuverability within the traffic stream is noticeably limited.	> 0.70 and ≤ 0.84
E	Roadway is operating at or near capacity, with vehicles closely spaced. Any incident can cause backups that propagate upstream.	> 0.84 and ≤ 1.00
F	Roadway is operating beyond capacity, with significant queuing at bottlenecks such as key intersections or lane drops. Vehicles are closely spaced and maneuverability is extremely restricted.	> 1.00

Note: LOS = level of service; v/c = volume-to-capacity
Source: Transportation Research Board, 2000.

The locations of the five study intersections and two study roadway segments are illustrated in Figure 4.

(7) The Highway Capacity Manual does not provide specific guidance regarding the lane capacity of local streets, so reductions are typically taken on the recommended capacities for highways to better reflect traffic conditions on these roadway facilities.

(8) The capacity of urban streets and other roadway facilities with minimal access control is generally determined by the operations of intersections along the segment in question, as traffic signals and stop signs will ultimately control vehicle flow and travel speed. As such, roadway capacity analysis is generally only conducted for facilities with high access control (e.g., freeways and highways), and the analysis of traffic operations for facilities with low access control generally focuses on intersections in lieu of mid-block segments. Due to intersection density and the presence of traffic control devices, urban arterials with signal control are typically assumed to accommodate up to 900 vphpl, dropping to 600 vphpl for minor collector roads. Given the local context of the selected study roadway segments as neighborhood streets, a conservative capacity of 450 vphpl was assumed for this analysis.

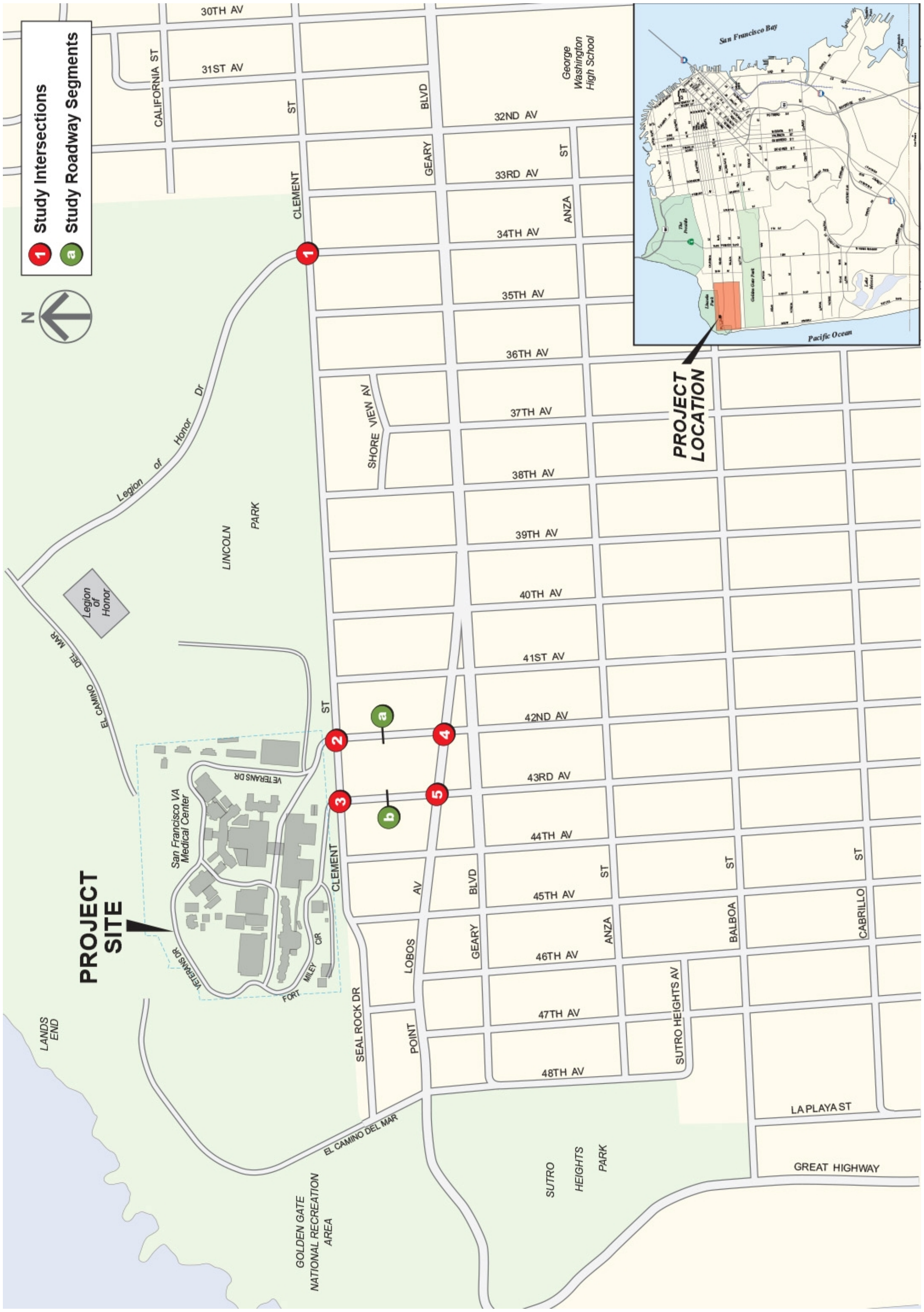

Figure 4: Intersection and Roadway Segment Analysis Locations

Passenger Vehicle Access

Impacts on passenger vehicle access and related activities such as passenger loading were qualitatively assessed.

East Fort Miley Access

Impacts on vehicle access for GGNRA traffic at East Fort Miley were qualitatively assessed.

Transit Conditions

Public Transit

The analysis of impacts on transit operations and facilities focuses primarily on Project-generated increases in ridership during the weekday p.m. peak hour on Muni lines serving the Campus—namely, services in the Geary Boulevard corridor (38 Geary, 38L Geary Limited, and 38AX Geary "A" Express). Consistent with standard methodologies for the analysis of transit impacts as described in the SF Guidelines, the expected increase in transit riders was estimated based on empirical data regarding mode share and other travel behavior characteristics. The estimated ridership was then compared against existing (i.e., without the Project) ridership and capacity utilization[9] on Muni vehicles during the weekday p.m. peak hour as they pass through their maximum load point (MLP), defined as the stop along a given line where average passenger loads reach their peak.

A capacity utilization greater than 85 percent is considered unacceptable, consistent with the San Francisco Municipal Transportation Agency (SFMTA) Board's adoption of an "85 percent" standard for transit vehicle loads in accordance with Proposition E. The SFMTA Board has determined that this threshold most accurately reflects actual operations and the likelihood of "pass-ups" (i.e., vehicles not stopping to pick up more passengers).

Other impacts on public transit conditions resulting from Project-generated activities (such as increased vehicular traffic) and changes in the Campus circulation system were qualitatively assessed.

SFVAMC Shuttle Services

Existing shuttle services at the Campus were documented, including destinations served, schedules, operators, and access routes and stop locations on Campus. Impacts on shuttle access resulting from changes in the Campus circulation system were qualitatively assessed.

Taxi Services

Existing taxi access at the Campus was documented, including access routes and stop locations on Campus. Impacts on taxi access resulting from changes in the Campus circulation system were qualitatively assessed.

Pedestrian Conditions

Pedestrian conditions were qualitatively assessed within the Campus and in the surrounding neighborhoods. The quality of existing pedestrian facilities, including sidewalks, crosswalks, and curb ramps, was evaluated, and existing pedestrian access routes and activity to and from the Campus was documented. Potential safety issues and points of conflict with vehicular traffic were also identified. The expected increase in pedestrian traffic resulting from the Project was estimated, and potential impacts on pedestrian conditions from Project-generated activities (such as increased vehicular traffic) and changes in the Campus circulation system were qualitatively assessed.

Bicycle Conditions

Existing bikeways in the vicinity of the Project site were identified and classified by facility type:

- <u>Class 1</u>
  Dedicated off-street paths or trails. These facilities are usually, but not always, paved and may be either designated for the exclusive use of bicyclists or shared with other users such as hikers and horseback riders.

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[9] Capacity utilization is a calculation of actual ridership on a given transit service as a percentage of the total capacity of the service. The design capacity of transit vehicles can vary, but in the case of Muni is assumed to include both seated and standing capacity, where standing capacity is between 30 and 80 percent of the seated capacity depending on the vehicle design.

- Class 2
  Dedicated road space in the paved right-of-way. These facilities are most frequently associated with marked bicycle lanes, but also include cycle tracks or other facilities that may feature a variety of treatments such as raised pavement or curbs, high-visibility paint, or protective barriers.

- Class 3
  Shared road space in the paved right-of-way, operating in mixed flow with other vehicles such as cars, buses, and trucks. Typically known as bicycle routes, these facilities usually offer little physical protection for bicyclists, but will usually be accompanied by signage and pavement markings such as sharrows.

Bicycle conditions throughout the study area were qualitatively assessed as they relate to the Project study area—including safety and right-of-way issues—and existing and potential new bicycle facilities were identified. Impacts on bicycle conditions resulting from Project-generated activities (such as increased vehicular traffic) and changes in the Campus circulation system were also qualitatively assessed.

Vehicle Parking Conditions

Parking supply and occupancy for on- and off-street public parking facilities in the study area were documented, as obtained through field surveys in September 2013. Off-campus (i.e., on-street, along City streets) parking conditions were evaluated in the neighborhood surrounding Fort Miley, consistent with the standard methodology described in the SF Guidelines, which requires that any parking analysis consider a parking area within a two-block radius of a project site. Specifically, on-street parking conditions were evaluated for a six-block area bounded by Clement Street to the north, Geary Boulevard to the south, 39th Avenue to the east, and 45th Avenue to the west. The on-street parking study area is illustrated in Figure 5.

Parking occupancy surveys were conducted during the weekday morning (9:00 a.m. to 11:00 a.m.), midday (1:00 p.m. to 3:00 p.m.), and evening (7:00 p.m. to 9:00 p.m.) peak periods to obtain sufficient data to characterize parking demand over the course of the day.

New parking demand generated by the Project was estimated using demand rates published by the Institute of Transportation Engineers in Parking Generation (4th ed., 2010) and compared against the proposed supply of new parking at the site. The Project's proposed supply of parking was also evaluated against guidance in the Planning Code regarding off-street parking requirements.

Freight Loading Conditions

Existing freight loading conditions within the site, including access to and from the Campus and frequency of truck traffic, were documented. Impacts on freight loading access resulting from changes in the circulation system were qualitatively assessed.

Emergency Vehicle Access Conditions

Existing conditions for emergency vehicle access were examined, including both fire access and emergency medical (ambulance) access. Impacts on emergency vehicle access resulting from changes in the circulation system were qualitatively assessed.

Construction Conditions

The effect of construction-related activities at the Project site on traffic and transportation was evaluated, including the loss in on-site parking capacity and the temporary increase in traffic and parking demand at the Project site resulting from the presence of vendor/haul trucks and construction worker vehicles. Construction-related traffic was quantitatively estimated and compared against available on-site parking to determine potential impacts during construction. Other potential impacts related to haul truck access to the Project site and disruption of general circulation at the Project site were qualitatively assessed.

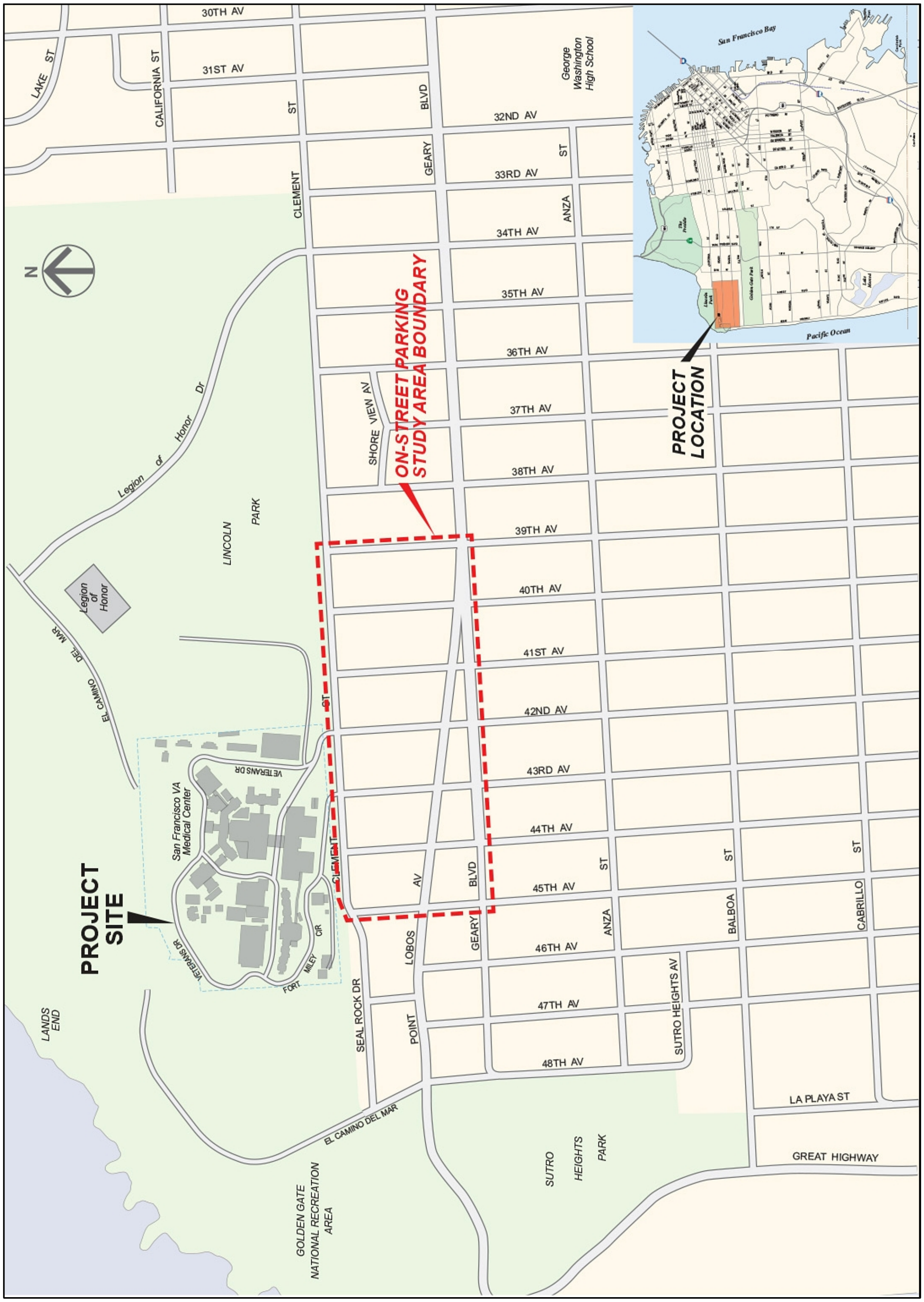

Figure 5: On-Street Parking Study Area

1.5 Existing Conditions

This section provides a description of the existing transportation conditions in the vicinity of the Project site. Included in this section are descriptions of the existing roadway, transit, bikeway, and pedestrian networks, and documentation of the existing traffic, transit, bicycle, pedestrian, vehicle parking, freight loading, and emergency vehicle access conditions.

1.5.1 Roadway Network

Regional and local roadway access serving the Project site is described in the following subsections.

Regional Access

Regional vehicular access to and from the Project site is provided by State Route 1 (SR 1), United States Highway 101 (U.S. 101), I-80, and Interstate 280 (I-280).

East Bay
Regional vehicular access to and from the East Bay is provided primarily by I-80 and the Bay Bridge, with on- and off-ramps at First Street/Fremont Street/Essex Street/Bryant Street in Rincon Hill, Fourth Street/Fifth Street in Central South of Market (SoMa), and Seventh Street/Eighth Street in Western SoMa. Alternative access to I-80 is provided via U.S. 101 and the U.S. 101/I-80 interchange, which can be accessed via the Central Freeway ramps at Mission Street/South Van Ness Avenue or the U.S. 101 terminus at Market Street/Octavia Boulevard. Vehicles would be expected to use major local arterials such as Geary Boulevard/O'Farrell Street, Turk Boulevard/Golden Gate Avenue, or Fell Street/Oak Street to travel between the Project site and these ramps.

South Bay
Regional vehicular access to and from the South Bay is provided primarily by SR 1—operating through most of the San Francisco city limits as a surface arterial (19th Avenue/Park Presidio Boulevard)—and I-280. Access to SR 1 is provided via the Park Presidio Boulevard/Geary Boulevard intersection, and access to I-280 is provided via its interchange with SR 1 (Junipero Serra Boulevard) near John Daly Boulevard in Daly City. Vehicles would be expected to use Geary Boulevard to travel between the Project site and SR 1.

North Bay
Regional vehicular access to and from the North Bay is provided by SR 1 (Park Presidio Boulevard in the vicinity of the Project site) and the Golden Gate Bridge. Access to SR 1 is provided via the Park Presidio Boulevard/Geary Boulevard intersection, and vehicles would be expected to use Geary Boulevard to travel between the Project site and SR 1.

Local Access

As part of its General Plan, the City and County of San Francisco identifies several types of roadway networks, including the Congestion Management Program (CMP) network, the Metropolitan Transportation System (MTS) network, Transit Preferential Streets, and the Citywide Pedestrian Network. Local roadways serving the Project site and their functional designations in the General Plan are described in more detail below.

Clement Street
Clement Street is an east–west collector road running from 45th Avenue in the west (where it continues as Seal Rock Drive to El Camino del Mar and Lands End) to Arguello Boulevard in the east. In the vicinity of the Project site, Clement Street is two-way with one travel lane in each direction. On-street parking is provided on both sides of the street, with restrictions during street cleaning periods.

Geary Boulevard
Geary Boulevard is a major east–west street that runs from 48th Avenue and Sutro Heights Park in the west (with a branch connecting to Point Lobos Avenue at 39th Avenue/40th Avenue) to Gough Street in the east, where it continues as the one-way couplet of O'Farrell Street (eastbound) and Geary Street (westbound) to Market Street in Downtown San Francisco. In the vicinity of the Project site, Geary Boulevard is two-way with two to three travel lanes in each direction. On-street parking is provided on both sides of the street, with restrictions during street cleaning periods. The San Francisco General

Plan identifies Geary Boulevard as a Major Arterial in the Congestion Management Plan (CMP) network through the study area. Geary Boulevard is also classified as a Metropolitan Transportation System (MTS) roadway, a Neighborhood Commercial Street, and a Transit Preferential (Transit-Important) Street.

Point Lobos Avenue
Point Lobos Avenue is a major east–west street running from the Cliff House and Ocean Beach in the west (where it continues as the Great Highway south to Daly City) to 39th Avenue and 40th Avenue, where it merges with Geary Boulevard. On-street parking is provided on both sides of Point Lobos Avenue. The San Francisco General Plan identifies Point Lobos Avenue as a Transit Conflict Street in the CMP network through the study area. Point Lobos Avenue is also classified as an MTS recreational street.

34th Avenue
34th Avenue is a north–south collector road running from El Camino Del Mar (near Lincoln Park and the Legion of Honor) in the north to Fulton Street and Golden Gate Park in the south. A separate section of 34th Avenue, functioning primarily as a local road, runs from Lincoln Way on the south side of Golden Gate Park to Sloat Boulevard. In the vicinity of the Project site, 34th Avenue is two-way, with one travel lane in each direction. On-street parking is provided on both sides of the street, with restrictions during street cleaning periods.

42nd Avenue and 43rd Avenue
42nd Avenue and 43rd Avenue are north–south collector roads running from Clement Street in the north to Fulton Street and Golden Gate Park in the south. 42nd Avenue continues through Golden Gate Park as Chain of Lakes Drive, connecting with 41st Avenue at Lincoln Way and continuing south to Sloat Boulevard. A separate section of 41st Avenue also runs south of Golden Gate Park, but there is no direct connection through Golden Gate Park. In the immediate vicinity of the Project site, 42nd Avenue and 43rd Avenue are both two-way streets, with one travel lane in each direction, and serve as the two main access points to the Campus. On-street parking is provided on both sides of 42nd Avenue and 43rd Avenue, with restrictions during street cleaning periods.

Fort Miley Circle and Veterans Drive
Fort Miley Circle and Veterans Drive are the two primary roadways within the Campus, providing access to buildings and other facilities on the Project site. Both are generally two-way roadways with one travel lane in each direction, with the exception of the section of Fort Miley Circle from Building 203 in the east to Veterans Drive in the west, which is one-way westbound. Veterans Drive connects into the Campus's two main access points at the 43rd Avenue/Clement Street and 42nd Avenue/Clement Street intersections.

1.5.2 Traffic Conditions

Intersections

Traffic counts for each study intersection were collected during the weekday p.m. peak period (4:00 p.m. to 6:00 p.m.) on a nonholiday, fair-weather weekday while school was in session (Tuesday, February 15, 2011), and are included in Appendix A. Lane geometry for each intersection is presented in Figure 6 and the Existing Conditions traffic volumes are presented in Figure 7. The Existing Conditions intersection LOS is summarized in Table 6 and the detailed LOS calculations are provided in Appendix B.

As shown in Table 6, all five study intersections currently operate at an acceptable LOS B during the weekday p.m. peak hour.

Roadway Segments

Volumes for the selected study roadway segments were derived from the turning movement counts collected as part of the intersection analysis, and were calculated as the maximum of the departure volumes from the upstream intersection and the arrival volumes at the downstream intersection. The Existing Conditions roadway segment Levels of Service are summarized in Table 7 and the detailed LOS calculations are provided in Appendix C.

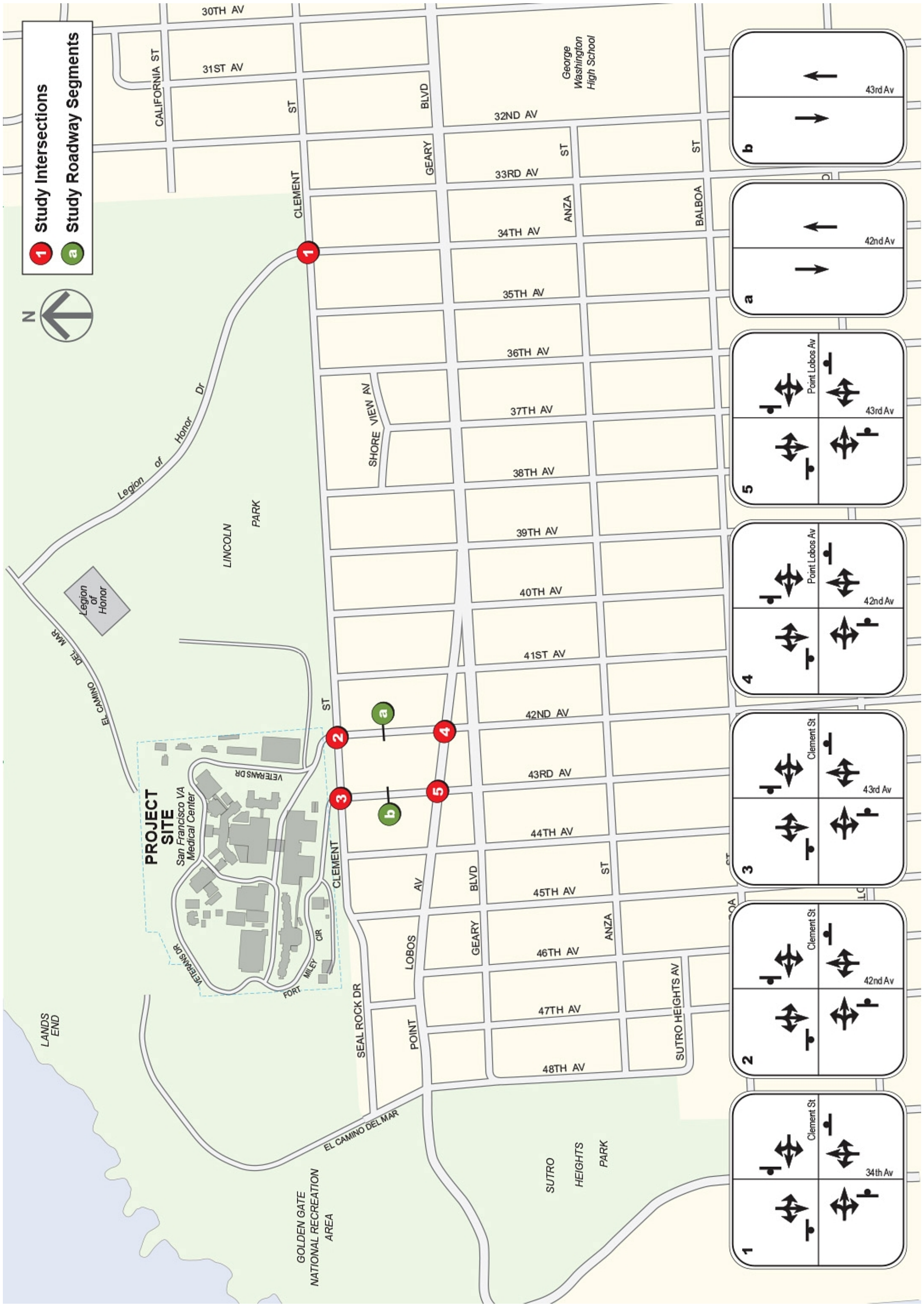

Figure 6: Intersection and Roadway Segment Lane Geometry—Existing Conditions

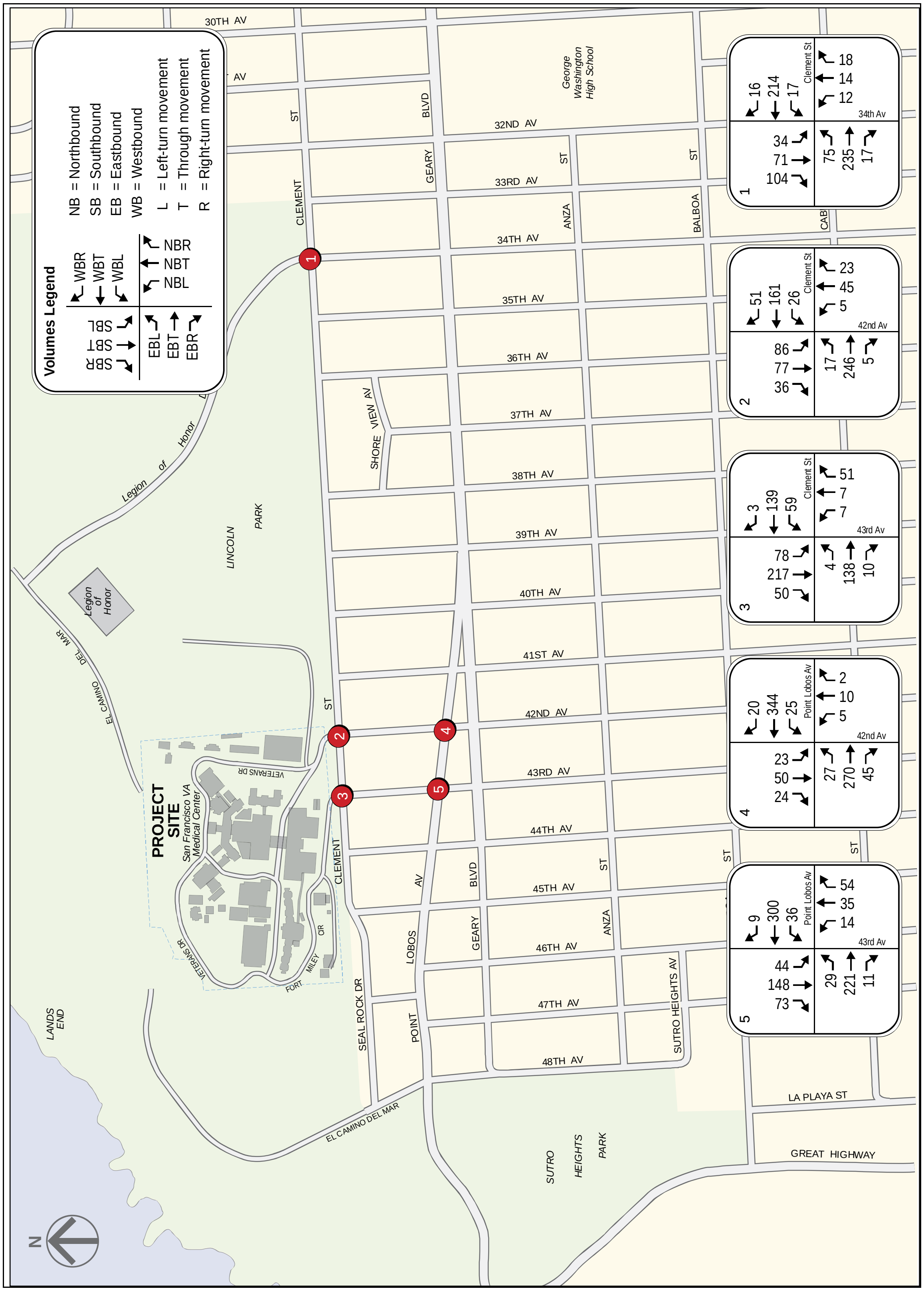

Figure 7: Intersection Traffic Volumes—Existing Conditions

Table 6: Intersection Levels of Service— Existing Conditions (Weekday P.M. Peak Hour)

Intersection		Control Type	Existing Conditions	
			LOS	Delay (seconds/vehicle)
1	34th Avenue/Clement Street	All-Way Stop	B	11.8
2	42nd Avenue/Clement Street	All-Way Stop	B	11.0
3	43rd Avenue/Clement Street	All-Way Stop	B	11.7
4	42nd Avenue/Point Lobos Avenue	All-Way Stop	B	12.4
5	43rd Avenue/Point Lobos Avenue	All-Way Stop	B	14.2

Note: LOS = level of service
Source: Data compiled by AECOM in 2014

Table 7: Roadway Segment Levels of Service— Existing Conditions (Weekday P.M. Peak Hour)

Roadway Segment		Direction	Existing Conditions	
			LOS	v/c Ratio
1	42nd Avenue	Northbound	A	0.16
	Between Clement Street and Point Lobos Avenue	Southbound	A	0.24
2	43rd Avenue	Northbound	A	0.16
	Between Clement Street and Point Lobos Avenue	Southbound	C	0.64

Notes: LOS = level of service; v/c = volume-to-capacity
Source: Data compiled by AECOM in 2014

As shown in Table 7, all roadway segments currently operate at acceptable conditions (LOS C or better).

Passenger Vehicle Access
Passenger vehicles are currently the primary mode of transportation to and from the Campus. Access into and out of the Campus for passenger vehicles is provided by the Campus's main roadway access points at 42nd Avenue/Clement Street and 43rd Avenue/Clement Street; circulation within the Campus is provided by Veterans Drive and Fort Miley Circle. Most passenger vehicles carrying Veterans and visitors are destined for parking areas on the east side of the Campus—namely, Building 212 and Lot B—or Lot E in the center of the Campus. Pick-up and drop-off zones are provided along Fort Miley Circle between Building 200 and Building 203. Passenger vehicles carrying Campus employees are typically destined for areas on the west and north side of the Campus, including Building 209, Lot D, and Lot G.

Existing traffic patterns indicate that 42nd Avenue/Clement Street is the preferred entrance for vehicles entering the Campus, although 43rd Avenue/Clement Street is the preferred exit. Traffic volumes at these two intersections are generally higher than at other intersections in the immediate vicinity because of their function as the main access points into and out of the Campus. Observations indicated that although queues occasionally develop on some approaches at these intersections, they dissipate quickly and do not result in any spillover effects to other intersections. As indicated in Table 6, both access points into the Campus currently operate at LOS B with minimal delays.

East Fort Miley Access
The Campus also provides the sole roadway access for GGNRA operational facilities at East Fort Miley, located along the Campus's eastern edge. As part of the construction of Building 212 at the Campus, a one-lane access road approximately 12 feet wide was constructed to serve this GGNRA facility, including traffic generated by GGNRA employees, interns, and volunteers, as well as earth-moving activities and materials deliveries. The access road to East Fort Miley connects into the Campus roadway network at Veterans Drive/Fort Miley Circle, at the southwest corner of Building 212 and just north of the 42nd Avenue entrance into the Campus.

1.5.3 Transit Conditions

Existing transit service to and from the Campus consists of public transit services operated by SFMTA/Muni and special SFVAMC shuttle services serving patients, staff, and other Campus users, as discussed below. Because accommodations for taxis and shuttles on the Campus are similar, this subsection also discusses taxi service, although taxis are not generally considered "transit."

Public Transit

Local Transit

Local transit service to the Campus is provided primarily by Muni bus services in the Geary Boulevard corridor—one of Muni's busiest corridors, connecting the Inner and Outer Richmond, Laurel Heights, and Fillmore/Japantown/Western Addition with Downtown San Francisco. The 38 Geary and 38L Geary Limited are the closest major routes serving the Campus, providing frequent service with articulated coaches capable of carrying 94 passengers each. The 38 Geary provides local service in the corridor and operates 24 hours a day, 7 days a week, and the 38L Geary Limited provides faster, limited-stop service during daytime hours (morning to early evening) on weekdays and Saturdays. Supplementary weekday peak-period service in the vicinity of the Campus is provided by the 38AX Geary "A" Express, but only in the general commute direction (inbound from the Outer Richmond to Downtown in the mornings and outbound from Downtown to the Outer Richmond in the evenings).

Muni service in the vicinity of the Campus is summarized in Table 8 and illustrated in Figure 8.

As shown in Table 8, the nearest major Muni stops to the Campus are at 42nd Avenue/Geary Boulevard in the inbound (eastbound) direction and at 42nd Avenue/Point Lobos Avenue in the outbound (westbound) direction, which are located approximately 500 feet from the southern edge of the Campus along Clement Street. These stops are served by all three lines, although the actual service varies by day and time of day.

Table 8: Muni Service in the Project Vicinity

Line		Vehicle Capacity (passengers)	Approximate Headway[1][2] (minutes)				Nearest Stop to the Project Site	
			Weekday A.M. Peak Hour		Weekday P.M. Peak Hour			
			Inbound	Outbound	Inbound	Outbound	Inbound	Outbound
38	Geary	94	12.0	12.0	7.5	8.0	Fort Miley Circle/Veterans Drive[3] or 42nd Avenue/Geary Boulevard	Fort Miley Circle/Veterans Drive[3] or 42nd Avenue/Point Lobos Avenue
38L	Geary Limited	94	5.5	5.5	5.5	5.5	42nd Avenue/Geary Boulevard	42nd Avenue/Point Lobos Avenue
38AX	Geary "A" Express	63	11	No service	No service	9.0	42nd Avenue/Geary Boulevard	42nd Avenue/Point Lobos Avenue

Source: SFMTA, 2011.

Notes:
(1) "Headway" is defined as the time interval between transit vehicles.
(2) To stay consistent with the most recent peak-hour ridership data published by the San Francisco Municipal Transit Agency, headways are presented as they were in 2011. Muni vehicles are typically defined as either traveling "inbound" (i.e., toward Downtown) or "outbound" (i.e., leaving Downtown).
(3) Direct service to and from Fort Miley varies by time of day. Not all buses serve Fort Miley.

Figure 8: Transit Network—Existing Conditions

In addition to these stops along Geary Boulevard and Point Lobos Avenue, a branch of the 38 Geary also directly serves Fort Miley and the Campus. Under current schedules (as of May 2014), weekday service on the Fort Miley branch of the 38 Geary is as follows:

- In the inbound direction, every other bus between approximately 6:00 a.m. and 7:30 p.m. departs from Fort Miley, with other buses departing from a separate terminal farther east of the Campus at 32nd Avenue/Balboa Street near Washington High School.

- In the outbound direction, all buses between approximately 5:30 a.m. and 8:00 a.m. and every other bus between 8:00 a.m. and 8:00 p.m. serves Fort Miley. Between 5:30 a.m. and 7:15 a.m., all outbound buses serving Fort Miley continue to 48th Avenue/Point Lobos Avenue (Lands End/Sutro Heights Park/Cliff House).

The Fort Miley service does not operate at other times of the day on weekdays. Service on Saturdays and Sundays is similar, although the start and end of service varies slightly from the weekday schedule. Buses operating on the Fort Miley service currently enter the Campus via 42nd Avenue, terminating at a stop to the south of Building 1 (ORTC Clinic) before looping through the site via Fort Miley Circle to 43rd Avenue and continuing back inbound to Downtown San Francisco.

Table 9 presents the weekday p.m. peak hour ridership, capacity, and capacity utilization for each of the Muni bus routes that directly serve the Project site. The ridership data presented is for the maximum load point (MLP) for each respective direction of each line, and represents the most recent automatic passenger count (APC) data published by SFMTA. The capacity data presented reflects the schedule at the time the ridership data was collected in fall 2011 (summarized in Table 8), and does not consider changes to Muni service since that time. For reference, the data for the 38BX Geary "B" Express are also included to present a more complete picture of conditions within the Geary Corridor, although this particular route does not directly serve the Campus (the outer terminus is at Geary Boulevard/25th Avenue, east of the Campus). The ridership and capacity calculations are included in Appendix D.

Table 9: Muni Ridership and Capacity— Existing Conditions (Weekday P.M. Peak Hour)

Line		Direction(1)	Existing Conditions (Weekday P.M. Peak Hour)			
			Ridership	Capacity	Utilization	Maximum Load Point
38	Geary	Inbound	352	752	47%	Geary Boulevard/Laguna Street
		Outbound	450	705	64%	Geary Boulevard/Franklin Street
38L	Geary Limited	Inbound	556	1,025	54%	Geary Boulevard/Divisadero Street
		Outbound	862	1,025	84%	Geary Boulevard/Van Ness Avenue
38AX	Geary "A" Express	Inbound	No service in inbound direction during weekday p.m. peak period			
		Outbound	280	420	67%	Pine Street/Montgomery Street
38BX	Geary "B" Express(2)	Inbound	No service in inbound direction during weekday p.m. peak period			
		Outbound	222	378	59%	Pine Street/Montgomery Street
Total		Inbound	908	1,777	51%	
		Outbound	1,814	2,528	72%	

Source: SFMTA, 2011.

Notes:
(1) Muni vehicles are typically defined as either traveling "inbound" (i.e., toward Downtown) or "outbound" (i.e., leaving Downtown).
(2) This line does not directly serve the Campus, but is included here for consistency and to present a more complete picture of transit conditions in the Geary Corridor.

As shown in Table 9, all three lines operate below 85 percent of capacity during the weekday p.m. peak hour in both the commute (outbound) and reverse-commute (inbound) directions. However, outbound services on the 38L Geary Limited are currently approaching the 85 percent policy standard as they depart the stop at Geary Boulevard/Van Ness Avenue.

Regional Transit

There is no regional public transit service in the immediate vicinity of the Campus. Transit passengers with origins or destinations outside of San Francisco typically need to transfer to or from Muni to complete their transit trip, or take advantage of the commuter shuttles serving the Campus (currently operated by Bauer's Transportation under contract with SFVAMC), as described in the following "SFVAMC Shuttle Services" subsection. Regional public transit services in San Francisco are described in more detail below.

- East Bay

  Regional public transit service connecting the East Bay (Alameda and Contra Costa Counties) with San Francisco is primarily provided by the San Francisco Bay Area Rapid Transit District (BART) and the Alameda–Contra Costa Transit District (AC Transit). BART provides regional rail service between San Francisco and the East Bay, with outer terminals at Pittsburg/Bay Point, Richmond, (East) Dublin/Pleasanton, and Fremont. Passengers traveling via BART would be able to transfer to Muni's 38 Geary and 38L Geary Limited at Montgomery Station or SFVAMC's commuter shuttles at Embarcadero Station (Ferry Building).

  AC Transit is the primary bus operator for Alameda and Contra Costa Counties, and operates an extensive network of commuter routes (some also operating all day and on weekends, although most only operate on weekdays during the commute period and in the general commute direction). Almost all of these routes terminate at the (Temporary) Transbay Terminal, where passengers can connect with Muni's 38 Geary and 38L Geary Limited or SFVAMC's commuter shuttles.

  Supplementary transit service to and from the East Bay is provided by ferry (terminals in Vallejo, at Oakland's Jack London Square, and in Alameda at Main Street and in Harbor Bay), as well as by commuter bus service operated by SolTrans (service to/from Vallejo via Route 200) and the Western Contra Costa Transit Authority (WestCAT) (service to/from Hercules via the Lynx Commuter Express).

- South Bay/Peninsula

  Regional public transit service connecting the South Bay and Peninsula (San Mateo and Santa Clara Counties) with San Francisco is provided primarily by BART, Caltrain, and SamTrans. BART provides service in northern San Mateo County, with outer terminals at San Francisco International Airport and Millbrae; passengers traveling on BART can transfer to Muni's 38 Geary and 38L Geary Limited at Montgomery Station or to SFVAMC's commuter shuttles at Civic Center Station.

  Caltrain provides commuter rail service along the full length of the Peninsula to San Jose, with some services extending farther south to Gilroy. Passengers traveling on Caltrain can transfer to SFVAMC's commuter shuttles at Caltrain's San Francisco terminal at Fourth Street/King Street, or can transfer to BART at Millbrae Station, transferring to the commuter shuttle at Civic Center Station.

  SamTrans is the primary bus operator in San Mateo County, and operates regular service to and from San Francisco on Routes KX and 292. Passengers on these services can transfer to Muni's 38 Geary and 38L Geary Limited or SFVAMC's commuter shuttles at Civic Center Station or the (Temporary) Transbay Terminal.

- North Bay

  Regional public transit service connecting the North Bay (Marin and Sonoma Counties) with San Francisco is provided primarily by the Golden Gate Bridge, Highway & Transportation District (GGBHTD). GGBTHD operates an extensive network of bus service to San Francisco through Golden Gate Transit, as well as ferry services departing from Larkspur and Sausalito. Passengers traveling on Golden Gate Transit can transfer to SFVAMC's commuter shuttles at the Golden Gate Bridge Toll Plaza, and passengers traveling via ferry can transfer at the Ferry Building. Supplementary transit service to/from the North Bay is provided by the Blue & Gold Fleet, which operates ferry services from Tiburon and Sausalito (terminating at Pier 41 in San Francisco's Fisherman's Wharf area).

SFVAMC Shuttle Services

SFVAMC provides a variety of local, regional, and intercity shuttle services through several different operating schemes, including services operated directly by SFVAMC staff, services operated jointly with the University of California San Francisco (UCSF), services contracted out to third-party for-profit companies (currently Bauer's Transportation), and services provided by the Disabled American Veterans (DAV) Volunteer Transportation Network (VTN). These services operate weekdays only (Mondays through Fridays) but serve a wide variety of Campus users, including patients, employees/staff, and visitors, as well as affiliated faculty, students, and guests of UCSF.

Specifically, SFVAMC currently contracts with Bauer's Transportation to provide free bus and shuttle service to SFVAMC staff members and patients daily. The service operates between the Campus and major transportation hubs in San Francisco (Ferry Building, Transbay Terminal, Caltrain's Fourth & King Station, and the Civic Center Station) from 5:00 a.m. to 9:00 a.m. and again from 2:30 p.m. to 6:30 p.m. More than 1,285 staff members and patients use this commuter service provided by the Veterans Administration (VA) every day. The DAV VTN also operates one roundtrip daily on shuttle services connecting patients in the North Bay and areas north (including Marin, Sonoma, Napa, Lake, and Mendocino Counties) with the Campus. SFVAMC also directly operates regular shuttle services for patients in Sonoma, Mendocino, and Humboldt Counties, as well as services connecting to other VA outpatient clinics in Downtown San Francisco and San Bruno. SFVAMC and UCSF also jointly operate frequent shuttle service between the SFVAMC Fort Miley Campus and the UCSF Parnassus Heights Campus.

Shuttle services at the Campus are summarized in Table 10.

Taxi Services

Currently, designated taxi stops are provided in two different locations on the Campus, between Building 200 and Building 203 and between Building 208 and Building 209. Taxis are permitted to enter and exit the Campus through either 42nd Avenue or 43rd Avenue.

1.5.4 Bicycle Conditions

During field observations, bicyclists were observed riding along the established bicycle routes near the SFVAMC Fort Miley Campus. Bicycle activity is generally low because of the hilly terrain and steep grades, as well as the location of the site well outside of Downtown San Francisco and major regional transportation hubs. However, SFMTA provides bicycle racks on the front of all Muni buses, and major regional public transit services such as BART and ferries allow passengers to bring bicycles on board. In addition, some of the shuttle services bringing patients, staff, and visitors to and from the Campus also feature bicycle racks. Overall, bicycle conditions were observed to be acceptable, with only minor conflicts observed between right-turning vehicles and bicyclists.

On-Campus

There are no designated bikeway facilities on the Campus and bicyclists must share Campus roads with other users, although the restricted speed limit (10 miles per hour) on the Campus helps to provide a safe riding environment for bicyclists. SFVAMC currently provides bicycle lockers and hitching posts for use by staff commuting to and from the Campus by bike.

Off-Campus

Four major citywide bicycle routes are provided in the vicinity of the Campus, supplemented by Class 1 trails through Lands End and Lincoln Park. These facilities are illustrated in Figure 9 and described in further detail below.

Table 10: SFVAMC Shuttle Services

Route	Operator	Daily Round Trips (Weekday)	Ridership Served
Intercity			
Mendocino/Humboldt Counties: Santa Rosa (VA Outpatient Clinic), Ukiah (VA Outpatient Clinic), Willits, Laytonville, Garberville, Rio Dell/Scotia, Fortuna, Eureka (VA Outpatient Clinic)	SFVAMC	1–2[(1)]	Patients
Sonoma/Mendocino Counties: Santa Rosa (VA Outpatient Clinic), Cloverdale, Hopland, Ukiah (VA Clinic)	SFVAMC	3.5[(2)]	Patients
Mendocino County (Inland): Cloverdale, Hopland, Ukiah	DAV VTN	1	Patients
Mendocino County (Coast): Boonville, Fort Bragg	DAV VTN	1	Patients
Napa/Lake Counties: Napa, Middletown, Lower Lake, Clearlake	DAV VTN	1	Patients
Regional/Commuter			
South Bay/East Bay Commuter: Ferry Building, Transbay Terminal, Caltrain (Fourth & King), Civic Center	Bauer's	10.5[(3)]	Patients, employees, volunteers
North Bay Commuter: Golden Gate Bridge Toll Plaza	Bauer's	6[(4)]	Patients, employees, volunteers
Marin/Sonoma Counties: Novato, Petaluma, Cotati, Santa Rosa	DAV VTN	1	Patients
San Bruno VA Outpatient Clinic	SFVAMC	4	Patients, employees, visitors
Local			
Downtown San Francisco VA Outpatient Clinic: Third Street/Harrison Street	SFVAMC	3	Patients, employees, visitors
UCSF Parnassus Campus: 401 Parnassus Avenue	SFVAMC/ UCSF	17[(5)]	Patients, faculty, employees, students, visitors

Source: VA, 2014a; Data compiled by AECOM in 2014

Notes:

DAV = Disabled American Veterans; SFVAMC = San Francisco Veterans Affairs Medical Center; UCSF = University of California, San Francisco; VA = U.S. Department of Veterans Affairs; VTN = Volunteer Transportation Network

(1) One round trip daily Mondays and Fridays, two round trips daily Tuesdays, Wednesdays, and Thursdays.

(2) Three southbound trips and four northbound trips daily.

(3) Commute period, commute direction only (inbound to SFVAMC in the mornings and outbound from SFVAMC in the afternoons/evenings). Operates on variable headways (10–30 minutes), with 11 inbound trips and 10 outbound trips.

(4) Commute period, commute direction only (inbound to SFVAMC in the mornings and outbound from SFVAMC in the afternoons/evenings). Operates on fixed headways (30 minutes), with six inbound trips and six outbound trips.

(5) Operates on variable headways (approximately 30 minutes peak, 60 minutes off-peak).

Route 10

Route 10 is a major east–west bikeway stretching from Lands End in the west to The Embarcadero in the east via Clement Street, Lake Street, Clay Street, and Pacific Street. In the immediate vicinity of the SFVAMC Fort Miley Campus along Clement Street, Route 10 comprises Class 3 facilities with painted sharrows and signage, but Class 2 facilities are provided farther east along Lake Street between 28th Avenue and Arguello Boulevard. At its western end, Route 10 connects to the Lands End trail network and Route 95. Due to the relatively flat terrain, low traffic volumes, and the presence of Class 2 facilities along Lake Street, Route 10 is one of the preferred east–west routes for reaching the Campus.

Route 85

Route 85 is a major north–south bikeway stretching from Lincoln Park and the Legion of Honor in the north to Lake Merced and the border with Daly City in the south via 34th Avenue and Lake Merced Boulevard. In the immediate vicinity of the Campus, Route 85 runs along Legion of Honor Drive and 34th Avenue and comprises Class 3 facilities with painted sharrows and signage, connecting with east–west facilities such as Route 10 and Route 395.

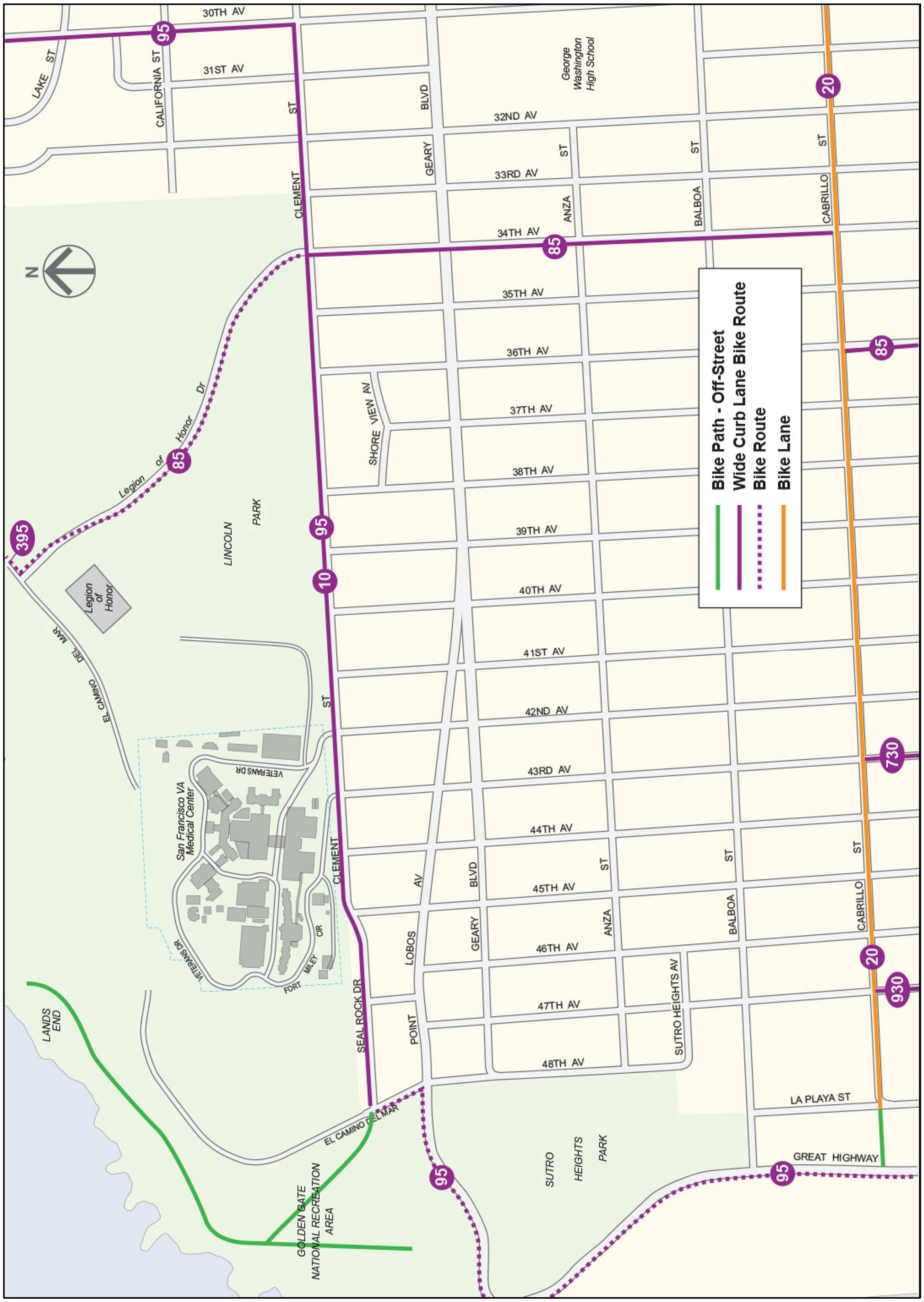

Figure 9: Bicycle Network—Existing Conditions

Route 95
Route 95 is a major north–south bikeway stretching from the Golden Gate Bridge in the north to Fort Funston and the border with Daly City in the south via Lincoln Boulevard, El Camino del Mar, Clement Street, Point Lobos Avenue/Great Highway, and Skyline Boulevard. In the immediate vicinity of the Campus, Route 95 is a Class 3 facility along Clement Street with painted sharrows and signage, overlapping with Route 10. Farther away, Route 95 includes sections of Class 1 and Class 2 facilities, such as through the Presidio and along the Great Highway.

Route 395
Route 395 is a minor east–west bikeway that serves as a branch of Route 95, connecting Route 85 and the shared-use trails in Lands End/Lincoln Park with Route 95 at 30th Avenue/El Camino del Mar. Route 395 is a Class 3 bikeway with painted sharrows and signage.

Lands End Trail Network
A network of recreational trails serves the Lands End/Lincoln Park area of the Golden Gate National Recreation Area, to the immediate north of the Campus. The unpaved trails are used primarily for hiking, walking, and running because of steep grades and frequent elevation changes, dense vegetation, narrow width, and high levels of foot traffic, but are open on some sections to recreational (mountain) bicyclists as Class 1 facilities.

1.5.5 Pedestrian Conditions

Generally, a low level of pedestrian activity was observed throughout the day in the vicinity of the Project site, although activity at 42nd Avenue/Clement Street and 43rd Avenue/Clement Street is slightly higher than at other minor intersections farther away as a result of foot traffic heading to and from the Campus, particularly during the weekday a.m. and p.m. peak periods. During the weekday p.m. peak period, sidewalks and crosswalks were observed to be operating at free-flow conditions with pedestrians moving at normal speeds and with freedom to bypass other pedestrians. The majority of Campus-related pedestrian traffic in the surrounding neighborhoods consist of staff and patients heading to and from transit stops or parked vehicles.

On-Campus

Sidewalks and walkways are generally provided throughout the Campus, and connect with off-Campus sidewalks along Clement Street. In particular, sidewalks are provided along Fort Miley Circle and most sections of Veterans Drive, and between the various buildings on the Campus. However, some segments of Veterans Drive, such as segments adjacent to Lot G and Lot J, currently lack sidewalks or designated pedestrian space on one or both sides. Pedestrians in these locations were observed to walk along the edge of the roadway, although these areas do not generally see high levels of pedestrian activity compared to other parts of the Campus.

Off-Campus

Sidewalks
Most major streets in the vicinity of the Campus have sidewalks on both sides of the street, although Clement Street abutting the Campus (between 43rd Avenue and 45th Avenue) and Lincoln Park (east of 42nd Avenue) lacks sidewalks along the north side. Sidewalk width is at least four feet wide or greater, although obstructions such as utility poles, fire hydrants, and shrubbery may narrow the effective width, such as along the south side of Clement Street at the southeast corner of 42nd Avenue/Clement Street or the north side of Clement Street at the northwest corner of 43rd Avenue/Clement Street. Sidewalk pavement condition is generally good, although there is a high frequency of curb cuts because of the residential nature of the neighborhood and the need to secure access to ground-level garages for homes.

Crosswalks
Provisions of marked crosswalks at intersections varies by location and direction—in the immediate vicinity of the Campus, marked crosswalks are only provided across two legs at 42nd Avenue/Clement Street (west and south legs) and 43rd Avenue/Clement Street (east and south legs), although stop bars are provided on the pavement. Farther from the Campus, minor intersections along Clement Street west and east of the Campus generally lack marked crosswalks completely; major intersections south of the Campus at 42nd Avenue/Point Lobos Avenue, 42nd Avenue/Geary Boulevard, 43rd Avenue/Point Lobos Avenue, and 43rd Avenue/Geary Boulevard feature marked crosswalks on all legs. Crosswalk markings are low-

visibility designs (parallel lines) lacking special treatments (e.g., ladder, continental, or diagonal striping; high-visibility signage; flashing devices) and generally in poor condition, with substantial fading or cracking.

Curb Ramps
Similar to sidewalks, the provision of curb ramps varies by location and street corner. In the immediate vicinity of the Campus, curb ramps are missing at some street corners at 42nd Avenue/Clement Street (northeast corner) and 43rd Avenue/Clement Street (northwest corner), or may only be provided in one orientation (e.g., southwest corners at both intersections). Most existing curb ramps at these intersections and in the surrounding area are not compliant with the Americans with Disabilities Act (ADA), lacking tactile warning devices such as truncated dome tiles.

1.5.6 Vehicle Parking Conditions

On-Campus

Parking Supply
Existing off-street parking facilities on the Campus as of 2012 are described in the LRDP and consist of ten surface lots (Lot B through Lot L) and two parking structures (Building 209 and Building 212), providing a total of 1,253 parking spaces. Existing on-site parking facilities are illustrated in Figure 10 and summarized in Table 11.

Patients and visitors may currently park in Lot B, Lot H, Building 209, and Building 212, and the remainder of the facilities are designated for SFVAMC employees (with the exception of some spaces within Lot D reserved for use by the General Services Administration [GSA]). Not included within the summary of parking supply in Table 11 are four additional spaces provided near Building 32 (Child Care Center) for pick-up/drop-off activities, as well as curb space along Fort Miley Circle adjacent to Building 208, Building 209, Building 200, and Building 203 designated for various uses such as police parking and shuttle parking.

Table 11: Existing Campus Parking Inventory

Facility	Configuration	Function/User	Capacity (spaces)
Building 209	Structure	Employee/Visitor	422
Building 212	Structure	Patient	160
Lot B	Surface lot	Patient/Visitor	102
Lot C	Surface lot	Employee	13
Lot D	Surface lot	GSA/Employee	142
Lot E	Surface lot	Patient	23
Lot F	Surface lot	Employee	2
Lot G	Surface lot	Employee	87
Lot H	Surface lot	Patient/Visitor	17
Lot J	Surface lot	Employee	270
Lot K	Surface lot	Employee	7
Lot L	Surface lot	Employee	8
Total			1,253

Sources: VA, 2014b; VA, 2014c

Notes:
GSA = General Services Administration
Reflects status as of 2012, as reported in the LRDP. Some facilities listed have since been permanently or temporarily closed or restriped/reconfigured as a result of construction activities, Americans with Disabilities Act compliance, or other factors,

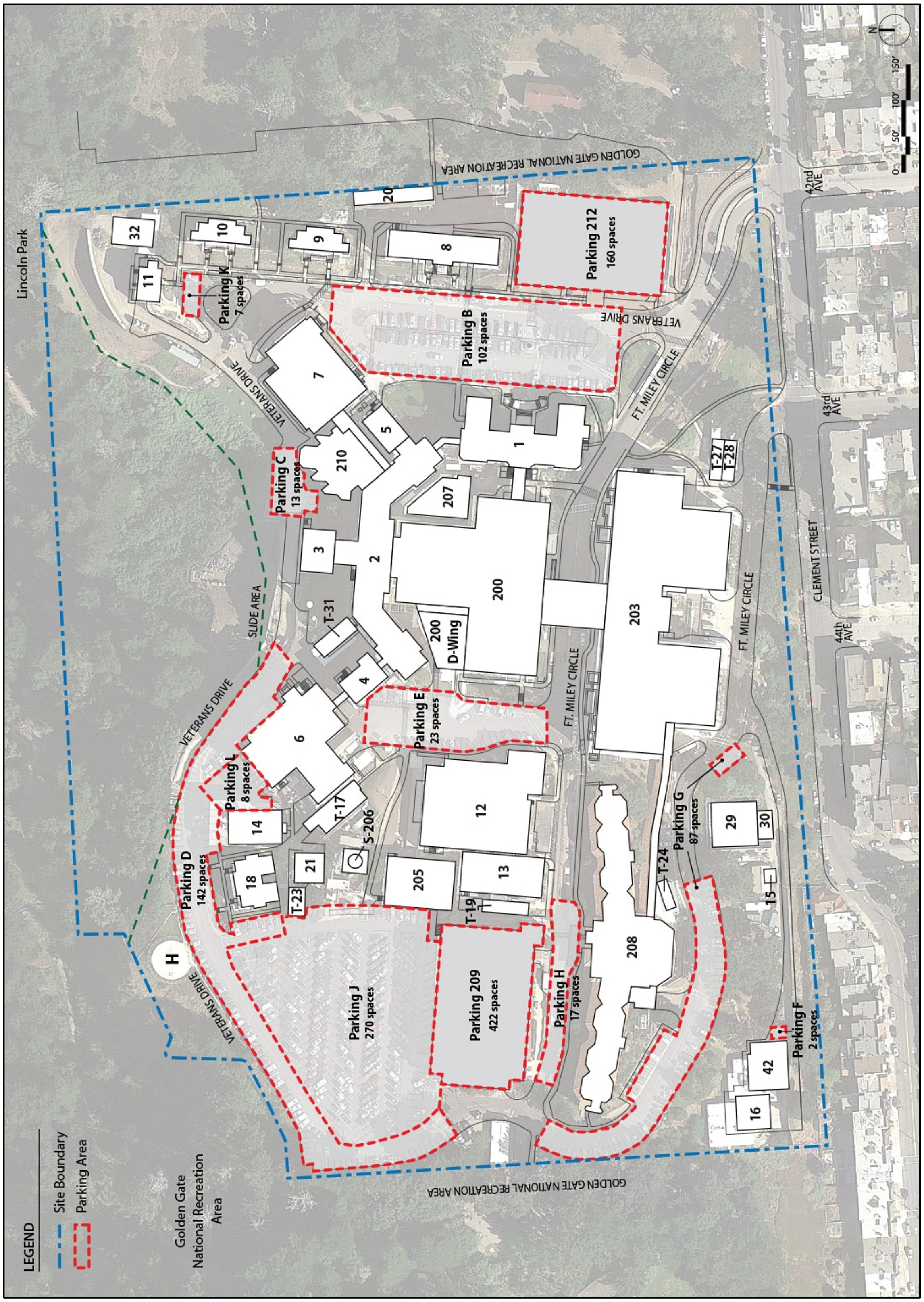

Figure 10: Off-Street Parking Facilities—Existing Conditions

It should also be noted that the parking supply summarized in Table 11 does not include the increase in supply provided by SFVAMC's valet parking programs for the two on-site parking structures (Building 209 and Buildings 212). Specifically, SFVAMC began providing valet parking for patients at Building 212 on March 19, 2012. A similar program has also been in effect since 2011 for users of Building 209. Although originally launched to offset the loss of parking capacity in Lot J as part of the construction of Building 211 and other facilities on the Campus, these valet parking programs currently provide an additional supply of approximately 150 spaces in Building 209 and 60 spaces within Building 212 because of greater space efficiencies.

Other recent changes not reflected in Table 11 include the closure of Lot K (now occupied by a temporary building) and the loss of approximately 10–12 spaces in Lot G adjacent to Building T-24 (to house a temporary building and trailer). Lot B has also been recently restriped to provide Americans with Disabilities Act (ADA) compliant spaces, resulting in a total of 75 marked spaces (a net loss of 27 spaces). When completed, the new Parking and Emergency Operations Structure under construction on Lot J will provide a net increase of up to 348 parking spaces on the Campus.

Parking Demand

A parking occupancy survey was conducted on Tuesday, September 10, 2013, for Campus parking facilities. This date was area.[10] Parking occupancy refers to the number of cars parked in a specific facility or area during one period of observation, and is expressed as the percentage of the total supply that is occupied by parked cars. It should be noted that the results of the parking occupancy survey are representative of 1-day field observations, and that occupancy can vary slightly from day to day.

Because of construction activities on Lot J related to Building 211 (the "Parking and Emergency Response Structure"), however, some of the on-site parking spaces normally available for use in Lot D, Lot E, and Lot J were instead cordoned off and unavailable at the time of the field observations. Installation of solar photovoltaic systems on the Campus also required the closure of portions of Building 209, while other construction activities also reduced regular parking capacity in Lot G. SFVAMC typically provides valet parking during construction to offset some of this loss in parking capacity. The current program in effect at the Campus encompasses Building 209 and Building 212 and provides approximately 210 additional spaces on the Campus. Given the changes to parking supply on the Campus as a result of construction of Building 211, supplementary data regarding on- and off-street parking utilization before the commencement of construction were also consulted to obtain a more accurate picture of parking conditions at the Campus under "normal" (i.e., non-construction) conditions.

Field observations from the parking survey, together with supplemental visual observations conducted on Thursday, March 13, 2014, indicated very high utilization of off-street parking facilities on the Campus on weekdays. The observations indicate that occupancy levels remain at or near capacity through the morning and midday periods, but decrease considerably by the evening survey period. Valet parking is well utilized in Building 209 (at or near 100 percent occupancy, where most supplementary circulation aisle space is used by the valet parking operator to provide additional spaces). Valet parking is less well utilized in Building 212, although occupancy surveys showed valet parking utilization topping out in the midday period, at slightly under 50 percent.

Because of construction activities related to Building 211, supplemental preconstruction data regarding on-site parking occupancy levels were obtained from a study prepared by CHS Consulting Group in 2003 for a proposed new building on the Campus for the Northern California Institute for Research and Education (NCIRE).[11] The data were obtained to help determine whether or not the observed occupancy levels in 2013 and 2014 represented "normal" (i.e., non-construction) conditions. The 2003 NCIRE Building Study observed 99 percent occupancy in employee spaces (937 of 948 spaces) and 86

[10] The parking occupancy survey was conducted on a scheduled street cleaning day to account for the parking changes during these days. Because street cleaning occurs two of the four weeks each month, it does not necessarily represent unique conditions. Typically, the areawide parking demand does not change when street cleaning is scheduled, but motorists tend to shift their parking locations to unaffected streets. Thus, the survey data can be considered representative of conditions on non-street-sweeping days at an areawide level.

[11] CHS Consulting Group, VA Medical Center NCIRE Building Transportation Study – Draft (February 10, 2003).

percent occupancy of patient and visitor spaces (229 of 266 spaces), for a combined 96 percent occupancy.[12] As a result, these occupancy levels generally corroborate the observed occupancy levels in 2013 and 2014. The 2013 and 2014 occupancy levels are slightly higher because of permanent changes in parking capacity since 2003 and the temporary loss in parking capacity that has resulted from construction activities on the Campus.

Off-Campus

As described in Section 1.4.2, on-street parking conditions were evaluated for a six-block area bounded by Clement Street to the north, Geary Boulevard to the south, 39th Avenue to the east, and 45th Avenue to the west, as illustrated in Figure 5.

Parking Supply

On-street parking in the vicinity of the Project site consists primarily of unmetered parallel parking. Angled parking is provided along the north side of Geary Boulevard between 43rd Avenue and 42nd Avenue and between 41st Avenue and 40th Avenue, and along the south side of Point Lobos Avenue between 43rd Avenue and 42nd Avenue. It should be noted that the angled parking provided on the north side of Geary Boulevard and south side of Point Lobos Avenue between 43rd Avenue and 42nd Avenue is located adjacent to a Walgreens store, the only major commercial land use in the immediate vicinity of the Campus. These spaces are designated as one-hour parking spaces between 8:00 a.m. and 6:00 p.m., and can be used by all motorists (i.e., these spaces are not designated for customer use only). All other on-street parking in the study area is adjacent to residential land uses, with the exception of parking along the north side of Clement Street abutting the south edge of the Campus.

Given that on-street parking within the study area is unmarked, the supply of on-street spaces has been estimated assuming 25 feet of curb space per vehicle. Based on this assumption, approximately 600 on-street parking spaces are currently provided in the parking study area. On-street parking capacity by block face is summarized in Figure 11.

Parking Demand

The parking study area, like most of the Richmond District, tends to have high on-street parking utilization, in part because the area has minimal parking restrictions (except during street cleaning) and no residential parking permits are required. In addition, many of the residential units have multiple tenants who do not have access to garage parking and therefore park on the street. More details about on-street parking restrictions for street cleaning (generally taking place for 2-hour periods during the second and fourth weeks of each month) are provided in the parking study included as Appendix G to this study.

Similar to on-Campus facilities, a parking occupancy survey of off-Campus (on-street) parking in the parking study area was conducted on Tuesday, September 10, 2013. Based on the field observations conducted, it was determined that on-street parking is well utilized throughout the day, although specific occupancy percentages can vary depending on location and peak period. During the weekday morning peak period, on-street parking occupancy ranges between 80 percent and 100 percent along most block faces, with an average overall occupancy of 87 percent. Parking occupancy along the north side of Clement Street (i.e., on-street parking nearest the Campus) was observed to be the lowest of any block face in the parking study area; however, the relatively lower occupancy levels may be attributed to the street cleaning restrictions in effect along this segment on the survey day, documented in Appendix E.

During the weekday midday peak period, on-street parking occupancy continued to range between 80 percent and 100 percent along most block faces, with an average overall occupancy of 90 percent. Parking spaces along the north side of Clement Street were observed to be nearly fully occupied, as the midday peak period occurs after the conclusion of street cleaning restrictions, at which time many motorists move their vehicles. Specifically, on-street parking spaces along the north side of Clement Street were found to be 100 percent occupied between 45th Avenue and 43rd Avenue, 92 percent occupied between 43rd Avenue and 42nd Avenue, and 93 percent occupied between 42nd Avenue and 39th Avenue during the weekday midday peak period.

[12] At the time of the study in 2003, a total of 1,214 spaces were counted on the Fort Miley Campus: 948 employee spaces and 266 patient and visitor spaces.

Figure 11: On-Street Parking Supply—Existing Conditions

During the weekday evening peak period, on-street parking occupancy levels are lower than during the weekday morning and midday peak periods, with many block faces experiencing occupancy levels below 80 percent. Average overall occupancy during the evening peak period was found to be 73 percent. On-street parking along Clement Street adjacent to the Project site remained relatively high, and lower occupancy levels were observed along Point Lobos Avenue and along roadways west of the Project site. Specifically, on-street parking spaces along the north side of Clement Street were found to be 100 percent occupied between 45th Avenue and 43rd Avenue, 85 percent occupied between 43rd Avenue and 42nd Avenue, and 53 percent occupied between 42nd Avenue and 39th Avenue during the weekday evening peak period.

On-street parking occupancy during the weekday morning, midday, and evening peak periods is illustrated in Figure 12. Detailed results of the parking occupancy survey are provided in Appendix E.

Because of on-site construction activities on the Campus and a corresponding decrease in available off-street parking during the field observations, additional sources of data regarding on-street parking conditions were consulted. Surveys conducted for the 2003 NCIRE Building Study documented weekday parking occupancy rates of 69 percent during the early morning, 75 percent during the midday, and 58 percent during the evening for the surrounding neighborhood.[13] Therefore, the average parking occupancies identified in field observations in 2013 are generally consistent with the survey data from 2003, with the higher observed utilization likely resulting from Campus construction activities that may have shifted some on-site parking demand into the surrounding neighborhood.

1.5.7 Freight Loading Conditions

Medical, office, and food supplies are delivered to the Campus on a daily basis. Service/delivery vehicles have the option of using either of the two main access points at 42nd Avenue/Clement Street and 43rd Avenue/Clement Street when entering and exiting the Campus, depending on their ultimate destination on the Campus. As illustrated in Figure 2, freight loading facilities are scattered throughout the Campus, with many of the key Campus facilities having dedicated off-street docks for use by trucks and other service/delivery vehicles. Specifically, there are currently eleven (11) loading bays at the campus:

- Building 6 (Administration/Shops/Research): One (1) bay;
- Building 7 (Canteen/Auditorium/Chapel): One (1) bay;
- Building 12: Three (3) bays;
- Building 203 (Inpatient Hospital/Diagnostics/Specialty Care): Four (4) bays; and
- Building 208 (Community Living Center): Two (2) bays.

1.5.8 Emergency Vehicle Access Conditions

Fire Access
Fire response service on the Campus is provided by the San Francisco Fire Department (SFFD). Fire engines and trucks can currently enter and exit the Campus via either of the two main access points at 42nd Avenue/Clement Street and 43rd Avenue/Clement Street and use internal roadways such as Veterans Drive or Fort Miley Circle to reach their ultimate destination on the Campus. Overall, the Campus currently provides adequate fire access.

Emergency Medical Access
SFVAMC currently provides only limited emergency medical services. Ambulances and other emergency medical vehicles arriving at the Campus are destined for Building 200 (Ambulatory Care Center), and typically enter the Campus via the 42nd Avenue access. Overall, the Campus currently provides adequate emergency medical access.

[13] The 2003 NCIRE Building study evaluated on-street parking conditions for a three-block study area bounded by Clement Street to the north, Geary Boulevard to the south, 40th Avenue to the east, and 43rd Avenue to the west, containing a total of approximately 533 on-street parking spaces.

Figure 12: On-Street Parking Occupancy—Existing Conditions

Figure 12b: On-Street Parking Occupancy Midday Peak Period

Figure 12c: On-Street Parking Occupancy Evening Peak Period

1.6 Regulatory Setting

This section provides a description of the major regulations governing the transportation assessment of the Project.

1.6.1 Federal

National Environmental Policy Act (NEPA) and Transportation Decision-Making
The principles of NEPA as they affect the transportation decision-making process include the following:

1. Assessment of transportation and parking impacts of the project
2. Analysis of alternatives to the project
3. Consideration of appropriate impact mitigation
4. Documentation and disclosure
5. Interagency coordination
6. Public involvement

Because the Project is a federal action with each of its NEPA alternatives' transportation and parking impacts assessed in this study, Items 1 through 4 above are satisfied by this TIS. Given that this TIS will serve as a technical appendix to the NEPA document currently being prepared for this Project, and thus, will be available for public review, including agency review, along with the NEPA document, Items 5 and 6 above will also be satisfied by this TIS.

1.6.2 State

As a federal Project, no State transportation plans, policies, or guidance apply.

1.6.3 Local

As a federal Project, no local transportation plans, policies, or guidance apply. However, in so much as the Project may have transportation-related impacts on the surrounding neighborhoods, the following City and County of San Francisco plans and guidance were utilized to assess the Project.

San Francisco General Plan: Transportation Element (Living Document), San Francisco Planning Department
The Transportation Element of the San Francisco General Plan describes policies and objectives for San Francisco's transportation system, including regional transportation, congestion management, vehicle circulation, transit, pedestrians, bicycles, vehicle parking, and goods movement. Relevant policies from the Transportation Element of the General Plan include the following:

- Policy 1.3: Give priority to public transit and other alternatives to the private automobile as the means of meeting San Francisco's transportation needs, particularly those of commuters.

- Policy 2.5: Provide incentives for the use of transit, carpools, vanpools, walking, and bicycling and reduce the need for new or expanded automobile and automobile parking facilities.

- Policy 12.1: Develop and implement strategies which provide incentives for individuals to use public transit, ridesharing, bicycling, and walking to the best advantage, thereby reducing the number of single occupant auto trips.

- Policy 16.5: Reduce parking demand through limiting the absolute amount of spaces and prioritizing the spaces for near-term and ride-share uses.

- Policy 33.1: Limit the provision of long-term automobile parking facilities at institutions and encourage such institutions to regulate existing facilities to assure use by near-term clients and visitors.

Transportation Impact Analysis Guidelines for Environmental Review (2002), San Francisco Planning Department
The Transportation Impact Analysis Guidelines for Environmental Review (SF Guidelines) describes the San Francisco Planning Department's guidelines for evaluating the transportation impacts of development projects. Included are descriptions of the analysis methodologies to be used in the analysis of traffic, transit, pedestrian, vehicle parking, and freight loading conditions, as well as empirical travel demand and travel behavior data collected in San Francisco.

San Francisco Planning Code (Living Document), San Francisco Planning Department
Although intended primarily to regulate planning-related issues such as land use/zoning, building height/bulk, historical preservation, and development impact fees, the Planning Code also codifies requirements related to the provision off-street parking (vehicles and bicycles) and freight loading facilities.

San Francisco Bicycle Plan (2009), San Francisco Municipal Transportation Agency (SFMTA)
The San Francisco Bicycle Plan identifies existing and planned bicycle facilities in the vicinity of the Project, as well as general policies to promote and increase safe bicycle use in San Francisco.

Regulations for Working in San Francisco Streets (8th edition, 2012), San Francisco Municipal Transportation Agency (SFMTA)
Known colloquially as the "Blue Book," Regulations for Working in San Francisco Streets outlines rules and guidance to minimize the disruption to transportation circulation resulting from construction activities. The Blue Book prescribes measures such as signage, flag control, construction zone protection, temporary pavement markings, and schedule coordination to deal with the effects of construction on the transportation system, including the removal of on-street parking; the closure of vehicle lanes, bicycle lanes, or sidewalks; the relocation of transit stops; and other effects.

2.0 Impact Analysis Methodology

This chapter summarizes the Project's estimated travel, vehicle parking, and freight loading demand, and discusses the criteria for determining significant environmental effects of the Project.

2.1 Project Demand Estimation Methodology

The Project would include changes to the type and intensity of land use, which would generate new demands on the transportation infrastructure serving the Project site. This section describes the analysis methodologies used to estimate these demands.

2.1.1 Travel Demand

Travel demand refers to the new vehicle, transit, bicycle, pedestrian, and other trips that would be generated by the Project. Travel demand estimates for the Project were developed based on data from the following sources:

- <u>Transportation Impact Analysis Guidelines for Environmental Review (SF Guidelines)</u>
  Published by the San Francisco Planning Department in October 2002, the SF Guidelines prescribes standard methodologies for analyzing transportation impacts of development projects in the City and County of San Francisco. The SF Guidelines also contains empirical data on travel behavior characteristics—namely, trip distribution, mode split, and average vehicle occupancy (AVO)—localized into four distinct quadrants (Superdistricts) of the city. The Campus is located within Superdistrict 2, representing northwestern San Francisco and including the Inner Richmond, Outer Richmond/Seacliff, the Presidio, the Marina, Cow Hollow/Pacific Heights, Laurel Heights, the Fillmore/Western Addition, the Haight, and Hayes Valley/North of Panhandle (NoPa). The Mission Bay Campus would be located within Superdistrict 3, representing most of central, eastern, and southeastern San Francisco and encompassing the Mission District, Castro/Noe Valley, Dogpatch/Potrero Hill, Mission Bay, Central Waterfront, Bayview/Hunters Point, Visitacion Valley, Outer Mission/Ingleside, Excelsior/Crocker Amazon, Diamond Heights/Glen Park, Portola/Silver Terrace, and Bernal Heights.

- <u>U.S. Census</u>
  The U.S. Census regularly collects and forecasts a variety of demographic data across the United States, including data on commute travel behavior, frequently referred to as "Journey to Work" data. Specifically, the U.S. Census provides data on residents' commute mode share ("means of transportation to work") and AVO, which can be obtained down to the Census tract level.

- <u>Trip Generation</u>
  Published by the Institute of Transportation Engineers (ITE), Trip Generation (9th ed., 2012) is the most commonly used source of land use-based trip generation rates, derived from empirical data collected through trip surveys at locations across the United States.

Details of the methodology for specific steps in the travel demand estimation process, including trip generation, mode split, and trip distribution, are described below.

Trip Generation

Trip Generation Rates

The person-trip generation for the Project includes trips made by patients, visitors, and employees of the proposed hospital, office, and research uses. Person-trips are typically estimated using trip generation rates contained in the SF Guidelines, but these rates are only provided for common uses such as residential, retail, restaurant, office, and industrial, as well as a subset of minor uses with unique tripmaking characteristics, such as supermarkets, hotels/motels, movie theaters, and daycare centers. The SF Guidelines does not provide rates for uses comparable to those proposed by the Project—namely, medical and medical-related uses such as hospitals, clinics, and medical research and development facilities. As a result, trip generation rates from ITE's Trip Generation (9th ed., 2012) were used in estimating the Project's travel demand, in lieu of the SF Guidelines rates. The Project's proposed uses were cross-referenced to corresponding ITE land use categories in Trip Generation as follows:

- Facilities providing inpatient medical care or mental health services—such as the Building 200 expansion (Operating Room D-Wing), Building 203 (C Wing Extension/Ground-Floor Patient Welcome Center), and Building 24 (Mental Health Clinical Expansion)— were approximated as "Hospital" (Land Use 610).

- Facilities providing administrative or office-related functions found in typical office buildings—namely, the Building 207 expansion (IT Support Space)—were approximated as "Office Building" (Land Use 710).

- Facilities providing research functions—such as Building 23 (Mental Health Research Expansion), Building 41 (Research), and Building 43 (Research and Administrative)—were approximated as "Research and Development Center" (Land Use 760).

- Facilities providing living assistance—namely, the Building 208 extension (Community Living Center/National Cardiac Device Surveillance Center)—were approximated as "Nursing Home" (Land Use 620).

- Facilities providing temporary lodging—namely, Building 22 (Hoptel)—were approximated as "Motel" (Land Use 320).

- Facilities providing primarily outpatient medical care—such as Building 213 (Clinical Addition)—were approximated as "Medical–Dental Office Building" (Land Use 720).

ITE trip generation rates are developed through the aggregation of trip surveys conducted for various land uses in suburban areas throughout the United States. Specifically, sites represented in the ITE samples are generally highly automobile-dependent and automobile-oriented, with the majority of trips taken by automobiles. Therefore, the ITE rates can be assumed to represent an approximately 100 percent automobile mode share, except for land uses where there can reasonably be expected to be some share of trips made on alternative modes of travel even in suburban environments, such as schools.

The SF Guidelines, however, examines trips made by all modes of travel, in keeping with the multimodal nature of travel behavior in a dense, urban environment like San Francisco. As a result, the ITE trip generation rates were adjusted using an AVO rate to back-calculate an estimated total person-trip generation for each given land use. Because the ITE samples include sites at various locations throughout the country, 2000 U.S. Census data on AVO for commute trips—representing a nationwide average, consistent with the size and geographic scope of the ITE survey samples—were used to derive these equivalent person-trip rates. Table 12 presents the trip generation rates used in the analysis of the Project.

Work/Non-work Splits
The SF Guidelines provides work/non-work splits for the weekday p.m. peak hour for common land uses such as residential, retail, restaurant, office, and industrial. Although the Project proposes primarily medical and medical-related uses, some of the proposed functions to exhibit work/non-work splits that are similar to the common land uses included in the SF Guidelines.

In particular, facilities providing administrative or office-related functions found in typical office buildings—approximated to the ITE's "Office Building" (Land Use 710)—and facilities providing research functions—approximated to the ITE's "Research and Development Center" (Land Use 760)—were assumed to exhibit work/non-work splits similar to standard office uses under the SF Guidelines. Facilities providing living assistance or lodging—approximated to the ITE's "Nursing Home" (Land Use 620) or "Motel" (Land Use 320)—were assumed to exhibit work/non-work splits similar to hotel/motel uses under the SF Guidelines. Work/non-work splits for other uses proposed by the Project were estimated based on empirical data obtained through trip surveys.

The assumed work/non-work splits for each land use category are summarized in Table 13.

Table 12: Assumed Person-Trip Generation Rates

ITE Land Use	Trip Rate Unit	ITE Trip Rate (trips per unit)		Equivalent Person-Trip Rate[1] (trips per unit)	
		Weekday Daily	Weekday P.M. Peak Hour	Weekday Daily	Weekday P.M. Peak Hour
Hospital (610)	1,000 square feet (gross)	13.22	0.93	14.28	1.00
Office (710)	1,000 square feet (gross)	11.03	1.49	11.91	1.61
Research and Development Center (760)	1,000 square feet (gross)	8.11	1.07	8.76	1.16
Nursing Home (620)	1,000 square feet (gross)	7.60	0.74	8.21	0.80
Motel (320)	room	5.63	0.47	6.08	0.51
Medical–Dental Office Building (720)	1,000 square feet (gross)	36.13	3.57	39.02	3.86

Source: Trip Generation (9th ed.), 2012; SF Guidelines, 2002; 2000 U.S. Census.

Notes:
ITE = Institute of Transportation Engineers
(1) ITE trip generation rates are adjusted using a nationwide average vehicle occupancy of 1.08 passengers per vehicle, per 2000 U.S. Census data.

Table 13: Assumed Work/Non-work Splits

ITE Land Use	Work/Non-work Split (Weekday P.M. Peak Hour)		Data Source
	Work	Non-work	
Hospital (610)	30%	70%	Empirical data from trip surveys
Office (710)	83%	17%	SF Guidelines (“Office”)
Research and Development Center (760)	83%	17%	SF Guidelines (“Office”)
Nursing Home (620)	60%	40%	SF Guidelines (“Hotel/Motel”)
Motel (320)	60%	40%	SF Guidelines (“Hotel/Motel”)
Medical–Dental Office Building (720)	30%	70%	Empirical data from trip surveys

ITE = Institute of Transportation Engineers; SF Guidelines = San Francisco Planning Department’s Transportation Impact Analysis Guidelines for Environmental Review (October 2002)
Sources: City and County of San Francisco Planning Department, 2002

Inbound/Outbound Splits

The SF Guidelines provides inbound/outbound splits for residential and commercial (i.e., non-residential) uses. Similar to work/non-work splits, facilities providing administrative or office-related functions found in typical office buildings—approximated to the ITE’s “Office Building” (Land Use 710)—and facilities providing research functions—approximated to the ITE’s “Research and Development Center” (Land Use 760)—were assumed to exhibit directional splits similar to “commercial” uses under the SF Guidelines.

For the remainder of the proposed uses, non-work trips were assumed to exhibit similar directional splits as for “commercial” uses, but work trips were assumed to exhibit a more evenly distributed directional split than “commercial” uses. In particular, facilities providing medical care, living assistance, or similar functions would be expected to operate 24 hours a day, requiring two to three distinct employee shifts per position through the course of a 24-hour period. As a result, it was assumed that the directional split for work trips for these uses would be substantially less weighted than for typical commercial uses.

The assumed inbound/outbound splits for each land use category are summarized in Table 14.

Table 14: Assumed Inbound/Outbound Splits

ITE Land Use	Inbound/Outbound Split (Weekday P.M. Peak Hour)			
	Work Trips		Non-work Trips	
	Inbound	Outbound	Inbound	Outbound
Hospital (610)	50%	50%	50%	50%
Office (710)	0%	100%	50%	50%
Research and Development Center (760)	0%	100%	50%	50%
Nursing Home (620)	50%	50%	50%	50%
Motel (320)	50%	50%	50%	50%
Medical–Dental Office Building (720)	50%	50%	50%	50%

Sources: SF Planning Department, 2002; Data compiled by AECOM in 2014

Mode Split

The Project-generated person-trips were assigned to travel modes using mode split data to determine the number of trips expected on each given travel mode. For the purposes of this analysis, trips were divided into the following modes defined by the SF Guidelines:

- Auto
- Transit
- Walk
- Other (bicycle, motorcycle, taxi, and other modes)

Mode split and AVO information for the Project was based on data provided in the SF Guidelines for Superdistrict 2 (for the Fort Miley Campus) and Superdistrict 3 (for the potential new Mission Bay Campus), summarized in Table 15.

Trip Distribution

The trips generated by the Project were distributed to the four quadrants (Superdistricts) of San Francisco, the rest of the Bay Area (the East Bay, the North Bay, and the South Bay/Peninsula), and outside the region based on empirical trip distribution data from the SF Guidelines for Superdistrict 2 and Superdistrict 3, summarized in Table 16.

2.1.2 Vehicle Parking Demand

Similar to the methodology for calculating travel demand, the Project's vehicle parking demand was estimated using parking demand rates provided in ITE's Parking Generation (4th ed., 2010), the industry-accepted source for land use–based parking demand rates. The rates provided in Parking Generation are derived from empirical data collected through parking surveys at locations across the United States. The Project's proposed land uses were cross-referenced to corresponding ITE land use categories in Parking Generation as follows:

- Facilities providing inpatient medical care or mental health services—such as the Building 200 expansion (Operating Room D-Wing), Building 203 (C Wing Extension/Ground-Floor Patient Welcome Center), and Building 24 (Mental Health Clinical Expansion)— were approximated as "Hospital" (Land Use 610).

- Facilities providing administrative or office-related functions found in typical office buildings—namely, the Building 207 expansion (IT Support Space)—were approximated as "Office Building" (Land Use 701).

Table 15: Assumed Mode Split and Average Vehicle Occupancy

Off-Site Trip End	Work Trips					Visitor (Non-work) Trips				
	Mode Split				AVO	Mode Split				AVO
	Auto	Transit	Walk	Other		Auto	Transit	Walk	Other	
Superdistrict 2 (Fort Miley Campus)										
San Francisco										
Superdistrict 1	39.3	40.7	16.7	3.3	1.19	41.7	35.5	16.4	6.4	1.93
Superdistrict 2	41.0	24.4	30.6	4.0	1.14	50.9	23.7	19.7	5.7	1.96
Superdistrict 3	49.9	48.0	0.0	2.1	1.25	57.1	22.3	9.9	10.7	2.05
Superdistrict 4	55.9	38.9	3.0	2.2	1.22	63.4	32.4	4.2	0.0	2.16
Rest of Bay Area										
East Bay	67.4	31.0	0.0	1.6	2.02	52.2	25.0	14.1	8.7	2.20
North Bay	81.5	16.1	0.0	2.4	1.53	73.6	8.8	14.7	2.9	1.89
South Bay	69.9	27.5	0.0	2.6	1.21	80.5	8.3	5.6	5.6	2.30
Other	95.7	1.8	0.0	2.5	3.16	48.3	19.7	23.8	8.2	2.07
Total	52.8	31.7	12.6	2.9	1.23	54.8	23.4	15.2	6.6	2.06
Superdistrict 3 (Mission Bay Campus)										
San Francisco										
Superdistrict 1	46.9	32.7	17.7	2.7	1.30	36.0	19.2	33.3	11.5	2.03
Superdistrict 2	64.6	26.4	6.9	2.1	1.26	68.6	14.5	2.4	14.5	1.97
Superdistrict 3	59.7	20.6	15.1	4.6	1.25	43.7	21.5	25.4	9.4	2.43
Superdistrict 4	75.7	21.5	0.0	2.8	1.48	67.4	16.3	7.0	9.3	2.51
Rest of Bay Area										
East Bay	68.8	29.7	0.0	1.5	1.61	68.4	29.8	1.8	0.0	2.59
North Bay	86.9	10.5	0.0	2.6	1.44	100.0	0.0	0.0	0.0	2.11
South Bay	88.5	8.8	0.0	2.7	1.13	94.6	3.6	1.8	0.0	2.28
Other	61.8	35.3	0.0	2.9	1.56	73.6	21.1	0.0	5.3	1.68
Total	71.1	20.2	5.8	2.9	1.23	56.8	18.6	16.3	8.3	2.26

Note: AVO = average vehicle occupancy
Source: SF Planning Department, 2002.

- Facilities providing research functions were approximated as “University/College” (Land Use 550), reflecting the academic and institutional nature of these functions.
- Facilities providing living assistance—namely, the Building 208 extension (Community Living Center/National Cardiac Device Surveillance Center)—were approximated as “Nursing Home” (Land Use 620).
- Facilities providing temporary lodging—namely, Building 22 (Hoptel)—were approximated as “Motel” (Land Use 320).
- Facilities providing primarily outpatient medical care—such as Building 213 (Clinical Addition)—were approximated as “Medical–Dental Office Building” (Land Use 720).

Table 16: Assumed Trip Distribution

Off-Site Trip End	Trip Distribution	
	Work Trips	Visitor (Non-work) Trips
Superdistrict 2 (Fort Miley Campus)		
San Francisco		
Superdistrict 1	8.4%	13%
Superdistrict 2	35.2%	27%
Superdistrict 3	15.8%	14%
Superdistrict 4	15.1%	9 %
Rest of Bay Area		
East Bay	7.1%	11%
North Bay	7.0%	4%
South Bay	10.6%	8%
Other	0.8%	14%
Superdistrict 3 (Mission Bay Campus)		
San Francisco		
Superdistrict 1	8.3%	13%
Superdistrict 2	10.6%	14%
Superdistrict 3	23.9%	44%
Superdistrict 4	7.9%	7%
Rest of Bay Area		
East Bay	14.3%	9%
North Bay	5.6%	1%
South Bay	26.9%	9%
Other	2.5%	3%

Source: SF Planning Department, 2002.

Similar to ITE trip generation rates, the ITE parking demand rates represent data samples in automobile-dependent and automobile-oriented suburban areas with negligible transit, biking, and walking mode shares. To correct the ITE parking demand rates, mode splits from the SF Guidelines were applied to the rates, reflecting the multimodal nature of travel in San Francisco and producing a more accurate estimate of the actual increase in parking demand expected with the Project.

Table 17 presents the trip generation rates used in the analysis of the Project, together with the peak parking demand period(s) as identified in Parking Generation. As shown in Table 17, the equivalent parking rates are approximately half of the rates published by the ITE in Parking Generation, reflecting the presence of attractive, viable alternative modes of travel in San Francisco. Most of the selected land use categories exhibit peaking characteristics similar to existing facilities on the Campus and reasonably approximate the weekday midday (1:00 p.m. to 3:00 p.m.) peak period selected for the parking occupancy surveys summarized in Section 1.5.6.

2.1.3 Freight Loading Demand

The SF Guidelines provide truck trip generation rates for common land uses such as residential, retail, light industry, and office, but does not provide specific rates for medical or medical-related uses. In particular, medical and medical-related uses may have specific freight loading needs (e.g., medical equipment and supplies, biohazard waste disposal) that may not be adequately reflected by attempting to approximate these land uses with more common ones for which the SF Guidelines specifically provides truck trip generation rates.

Table 17: Assumed Vehicle Parking Demand Rates

ITE Land Use	Parking Rate Unit	ITE Parking Rate (spaces per unit)	Equivalent Parking Rate (spaces per unit)		ITE Peak Parking Demand Periods (Weekdays)
			Superdistrict 1 (Fort Miley Campus)	Superdistrict 3 (Mission Bay Campus)	
Hospital (610)	1,000 square feet (gross)	3.70	2.16		9:00 a.m.–10:00 a.m. 12:00 p.m.–1:00 p.m. 3:00 p.m.–4:00 p.m.
Office Building (701)	1,000 square feet (gross)	2.47	1.20		9:00 a.m.–5:00 p.m.
University/College (550)	1,000 square feet (gross)	1.20	0.69	0.89	No data provided
Nursing Home (620)	1,000 square feet (gross)	0.98	0.57		9:00 a.m.–10:00 a.m. 11:00 a.m.–4:00 p.m.
Motel (320)	1,000 square feet (gross)	0.71	0.41		No data provided
Medical–Dental Office Building (720)	1,000 square feet (gross)	3.20	1.87	2.09	10:00 a.m.–12:00 p.m. 2:00 p.m.–3:00 p.m.

Note: ITE = Institute of Transportation Engineers
Sources: ITE, 2010; SF Planning Department, 2002; Data compiled by AECOM in 2014

In addition, most large campus environments such as the Project site typically provide freight loading spaces within each campus building or facility. Vehicle parking for large campuses is typically shared among various campus facilities and provided in facilities designed specifically for vehicle storage, but the nature of freight loading activities requires that loading spaces be typically provided in each building as needed, in the form of a loading dock or dedicated curb space.

As such, analysis of freight loading impacts is typically conducted for each specific building, at a time when the design of such buildings has been determined to a sufficient level of detail to identify the location of proposed freight loading facilities, the proposed supply of freight loading spaces, and the access routes for service and delivery vehicles. In particular, larger trucks may require specific accommodations with regard to building features (e.g., loading dock dimensions) or roadway design (e.g., curb radii) that typically require detailed turning template analyses to determine accessibility and usability of proposed freight loading facilities.

The Project, however, represents a master plan for the Campus involving multiple buildings and uses and, as such, is being analyzed here as part of a program-level environmental review. Specific details such as building features and roadway design will only be determined as each component of the LRDP begins to move into the design and implementation phase. As such, this study does not assess freight loading impacts with regard to the demand and supply of freight loading spaces or the accessibility and usability of freight loading facilities (and any associated effects of accessibility and usability off Campus). It is assumed that these impacts will be evaluated at a later time as each LRDP component undergoes its required project-level environmental review.

2.2 Project Demand

This section summarizes the estimates of Project travel, vehicle parking, and freight loading demand calculated according to the methodologies described in Section 2.1.

2.2.1 Travel Demand

Trip Generation

Table 18 and Table 19 summarize the estimated total person-trips generated by the Project under both the short-term (Phase 1) and long-term (Phase 2) time frames for Alternative 1 and Alternative 3, respectively. The trips in Table 18 and Table 19 represent net-new person-trips, accounting for reductions in travel demand as a result of the demolition or replacement of existing Campus facilities, but should be considered conservative estimates because they do not take into account the existing space deficiency at the Fort Miley Campus. Trips were not estimated for some uses, such as those involving non-habitable uses, because they would not be expected to generate or attract trips on their own, and were therefore excluded from the calculations. The travel demand calculations are included in Appendix F.

Because both Alternative 1 and Alternative 3 propose the same short-term actions, both alternatives would generate the same number of person-trips in the short-term time frame. As indicated in Table 18 and Table 19, Alternative 3 would generate substantially more net-new person-trips in the long-term time frame, but the majority of these trips would be concentrated at the potential new Mission Bay Campus.

2.2.2 Mode Split

Table 20 and Table 21 summarize the Project's estimated person-trips by mode during the weekday p.m. peak hour for Alternative 1 and Alternative 3, respectively.

Table 18: Net-New Person-Trip Generation—Alternative 1

Subphase		Action	ITE Land Use [Code]	Net New Gross Area in square feet	Net-New Person-Trips	
					Weekday Daily	Weekday P.M. Peak Hour
Short-term (Phase 1)						
1.1	Building 211: Emergency Operations Center/Parking Garage	Construction	EOC to be operated by existing staff (no new parking demand) Parking garage not a habitable space			
1.2	Trailer 17	Removal	R&D Center [760]	(1,700)	(15)	(2)
	Building 41: Research	Construction	R&D Center [760]	14,200	124	16
1.3	Buildings 5 and 7	Seismic Retrofit	Renovation of existing building/space			
1.4	Buildings 9 and 10	Seismic Retrofit	Renovation of existing building/space			
	Building 22: Hoptel[1]	Construction	Motel [320]	8,700	49	4
1.5	Buildings 209 and 211: Parking Garage Extensions	Construction	Not a habitable space			
1.6	Building 203: C-Wing Extension (Ground-Floor Patient Welcome Center)/Drop-Off Area with Canopy Structure	Construction	Hospital [610]	7,100	101	7
1.7	Building 200: Expansion (Operating Room D-Wing)	Construction	Hospital [610]	5,300	76	5
1.8	Building 20	Demolition	Currently used as storage			
	Building 24: Mental Health Clinical Expansion	Construction	Hospital [610]	15,600	223	16
1.9	Building 18	Demolition	R&D Center [760]	(9,700)	(85)	(11)
	Building 14	Demolition	R&D Center [760]	(6,400)	(56)	(7)
	Building 21	Demolition	R&D Center [760]	(1,700)	(15)	(2)
	Trailer 23	Removal	R&D Center [760]	(900)	(8)	(1)
	Structure 206: Water Tower	Installation	Not a habitable space			
	Structure 206: Water Tower	Removal	Not a habitable space			
	Building 40: Research	Construction	R&D Center [760]	110,000	963	127
1.10	Building 207: Expansion (IT Support Space)	Construction	Office Building [710]	7,000	83	11
1.11	Trailer 31	Removal	Hospital [610]	(1,500)	(21)	(2)
	Building 43: Research and Admin.	Construction	R&D Center [760]	15,000	131	17
1.12	Trailer 36: New Modular	Installation	R&D Center [760]	2,200	19	3

Subphase		Action	ITE Land Use [Code]	Net New Gross Area in square feet	Net-New Person-Trips	
					Weekday Daily	Weekday P.M. Peak Hour
1.13	Building 23: Mental Health Research Expansion	Construction	R&D Center [760]	15,000	131	17
1.14	Building 203: Extension (Psychiatric Intensive Care Unit C-Wing)	Construction	Hospital [610]	1,200	17	1
1.15	Trailer 24	Removal	Medical–Dental Office Building [720]	(1,000)	(39)	(4)
	Building 208: Extension (Community Living Center/National Cardiac Device Surveillance Center)	Construction	Nursing Home [620]	10,000	82	8
1.16	Building 8	Seismic Retrofit	Renovation of existing building/space			
	Building 1	Seismic Retrofit	Renovation of existing building/space			
	Building 6	Seismic Retrofit	Renovation of existing building/space			
1.17	Building 12	Demolition	R&D Center [760]	(38,900)	(341)	(45)
Subtotal					1,421	159
Long-term (Phase 2)						
2.1	Building 213: Clinical Addition Building	Construction		170,000	6,633	655
Subtotal					6,633	655
Total					8,055	815

Source: Data compiled by AECOM in 2014

Notes:

EOC = Emergency Operations Center; ITE = Institute of Transportation Engineers; R&D = research and development

Numerical values enclosed in parentheses indicate negative values (demolition of building/structure or reduction in trips).

(1) A guest room density of approximately 1 room per 1,000 gross square feet was assumed for the hoptel.

Table 19: Net-New Person-Trip Generation—Alternative 3

Subphase		Action	ITE Land Use [Code]	Net-New Gross Area in square feet	Net-New Person-Trips	
					Weekday Daily	Weekday P.M. Peak Hour
Short-term (Phase 1)						
Same as for Alternative 1						
Subtotal					1,421	159
Long-term (Phase 2)(1)						
2.1	Ambulatory Care Center	Construction	Medical–Dental Office Building [720]	140,000	5,463	540
2.2	Clinical Parking Garage (100 spaces)	Construction	Not a habitable space			
Subtotal					5,463	540
Total					6,884	699

Source: Data compiled by AECOM in 2014

Notes:

ITE = Institute of Transportation Engineers; R&D = research and development

(1) Under Alternative 3, the long-term (Phase 2) land use components of the LRDP would take place at the new Mission Bay Campus.

Table 20: Net-New Project Trips by Mode (Weekday P.M. Peak Hour)—Alternative 1

Direction	Net-New Person-Trips					Net-New Vehicle-Trips
	Auto	Transit	Walk	Other(1)	Total	
Short-term (Phase 1)						
Inbound	13	6	4	1	25	7
Outbound	67	39	17	4	127	49
Subtotal	81	45	20	6	152	57
Long-term (Phase 2)						
Inbound	177	85	47	18	327	101
Outbound	177	85	47	18	327	101
Subtotal	354	170	94	36	654	202
Total						
Inbound	190	91	51	19	352	108
Outbound	244	124	64	22	454	150
Total	435	215	114	42	806	259

Source: Data compiled by AECOM in 2014

Notes:
(1) "Other" includes bicycles, motorcycles, taxis, and other modes.

Table 21: Net-New Project Trips by Mode (Weekday P.M. Peak Hour)—Alternative 3

Direction	Net-New Person-Trips					Net-New Vehicle-Trips
	Auto	Transit	Walk	Other(1)	Total	
Short-term (Phase 1)						
Inbound	13	6	4	1	25	7
Outbound	67	39	17	4	127	49
Subtotal	81	45	20	6	152	57
Long-term (Phase 2)(2)						
Inbound	164	52	36	18	270	92
Outbound	164	52	36	18	270	92
Subtotal	327	104	72	37	540	184
Total						
Inbound	177	58	40	20	294	99
Outbound	231	91	53	23	397	141
Total	408	149	92	43	691	240

Source: Data compiled by AECOM in 2014

Notes:
(1) "Other" includes bicycles, motorcycles, taxis, and other modes.
(2) Under Alternative 3, the long-term (Phase 2) land use components of the LRDP would take place at the new Mission Bay Campus.

2.2.3 Vehicle Parking Demand

Table 22 and Table 23 summarize the weekday peak-hour vehicle parking demands for Alternative 1 and Alternative 3, respectively. The parking demand calculations are included in Appendix G.

Table 22: Net-New Project Parking Demand—Alternative 1

Subphase		Action	ITE Land Use [Code]	Net-New Gross Area in square feet	Net-New Weekday Peak Hour Parking Demand in spaces
Short-term (Phase 1)					
1.1	Building 211: Emergency Operations Center/Parking Garage	Construction	EOC to be operated by existing staff (no new parking demand) Parking garage not a habitable space		
1.2	Trailer 17	Removal	University/College [550]	(1,700)	(1)
	Building 41: Research	Construction	University/College [550]	14,200	9
1.3	Buildings 5 and 7	Seismic Retrofit	Renovation of existing building/space		
1.4	Buildings 9 and 10	Seismic Retrofit	Renovation of existing building/space		
	Building 22: Hoptel[1]	Construction	Motel [320]	8,700	3
1.5	Buildings 209 and 211: Parking Garage Extensions	Construction	Not a habitable space		
1.6	Building 203: C-Wing Extension (Ground-Floor Patient Welcome Center)/Drop-Off Area with Canopy Structure	Construction	Hospital [610]	7,100	14
1.7	Building 200: Expansion (Operating Room D-Wing)	Construction	Hospital [610]	5,300	11
1.8	Building 20	Demolition	Currently used as storage (no parking demand assumed)		
	Building 24: Mental Health Clinical Expansion	Construction	Hospital [610]	15,600	31
1.9	Building 18	Demolition	University/College [550]	(9,700)	(6)
	Building 14	Demolition	University/College [550]	(6,400)	(4)
	Building 21	Demolition	University/College [550]	(1,700)	(1)
	Trailer 23	Removal	University/College [550]	(900)	(1)
	Structure 206: Water Tower	Installation	Not a habitable space		
	Structure 206: Water Tower	Removal	Not a habitable space		
	Building 40: Research	Construction	University/College [550]	110,000	70
1.10	Building 207: Expansion (IT Support Space)	Construction	Office Building [701]	7,000	8
1.11	Trailer 31	Removal	Hospital [610]	(1,500)	(3)
	Building 43: Research and Admin.	Construction	University/College [550]	15,000	10
1.12	Trailer 36: New Modular	Installation	University/College [550]	2,200	1
1.13	Building 23: Mental Health Research Expansion	Construction	University/College [550]	15,000	10
1.14	Building 203: Extension (Psychiatric Intensive Care Unit C-Wing)	Construction	Hospital [610]	1,200	2
1.15	Trailer 24	Removal	Medical–Dental Office Building [720]	(1,000)	(2)
	Building 208: Extension (Community Living Center/National Cardiac Device Surveillance Center)	Construction	Nursing Home [620]	10,000	5
1.16	Building 8	Seismic Retrofit	Renovation of existing building/space		
	Building 1	Seismic Retrofit	Renovation of existing building/space		

	Building 6	Seismic Retrofit	Renovation of existing building/space		
1.17	Building 12	Demolition	University/College [550]	(38,900)	(25)
Subtotal					132
Long-term (Phase 2)					
2.1	Building 213: Clinical Addition Building	Construction	Medical–Dental Office Bldg. [720]	170,000	295
Subtotal					295
Total					426

Source: Data compiled by AECOM in 2014

Notes:

EOC = Emergency Operations Center; IT = information technology; ITE = Institute of Transportation Engineers

Numerical values enclosed in parentheses indicate negative values (demolition of building/structure or reduction in trips).

(1) A guest room density of approximately 1 room per 1,000 gross square feet was assumed for the hoptel.

Table 23: Net-New Project Parking Demand—Alternative 3

Subphase		Action	ITE Land Use [Code]	Net-New Gross Area in square feet	Net-New Weekday Peak Hour Parking Demand in spaces
Short-term (Phase 1)					
Same as for Alternative 1					
Subtotal					132
Long-term (Phase 2)[1]					
2.1	Ambulatory Care Center	Construction	Medical–Dental Office Building [720]	140,000	271
2.2	Clinical Parking Garage (100 spaces)	Construction	Not a habitable space		
Subtotal					271
Total					403

Source: Data compiled by AECOM in 2014

Notes:

ITE = Institute of Transportation Engineers

(1) Under Alternative 3, the long-term (Phase 2) land use components of the LRDP would take place at the new Mission Bay Campus.

2.2.4 Freight Loading Demand

As discussed in Section 2.1.3, it is assumed that freight loading impacts with regard to the demand and supply of freight loading spaces will be evaluated at a later time as each LRDP component undergoes its required project-level environmental review. As such, estimates of freight loading demand were not developed for this study.

2.3 Criteria for Determining Significance of Effects

Although the Project is a federal action and not subject to local transportation policies and guidance, insomuch as the Project may have transportation-related impacts on the surrounding neighborhoods, the following significance criteria used by the City and County of San Francisco Planning Department for the determination of transportation impacts associated with a proposed project were adopted for this study:

- The operational impact on signalized intersections is considered significant when project-related traffic causes the intersection LOS to deteriorate from LOS D or better to LOS E or LOS F, or from LOS E to LOS F. The operational impact on unsignalized intersections is considered significant when project-related traffic causes the intersection LOS to deteriorate from LOS D or better to LOS E or LOS F, or from LOS E to LOS F, and the conditions of the Manual on Uniform Traffic Control Devices (MUTCD) peak-hour signal warrant are met. In addition, a project would have a significant adverse impact if it would cause major traffic hazards or contribute considerably to cumulative traffic increases that would cause deterioration in levels of service to unacceptable levels.

- The project would have a significant effect if it would cause a substantial increase in transit demand that could not be accommodated by adjacent transit capacity, resulting in unacceptable levels of transit service; or cause a substantial increase in delays or operating costs such that significant adverse impacts in transit service levels could result.

- The project would have a significant effect if it would result in substantial overcrowding on public sidewalks, create potentially hazardous conditions for pedestrians, or otherwise interfere with pedestrian accessibility to the site and adjoining areas.

- The project would have a significant effect if it would create potentially hazardous conditions for bicyclists or otherwise substantially interfere with bicycle accessibility to the site and adjoining areas.

- The project would have a significant effect if it would result in a substantial parking deficit that could create hazardous conditions or significant delays affecting traffic, transit, bicycles, or pedestrians, and where particular characteristics of the project or its site demonstrably render use of other modes infeasible.

- A project would have a significant effect if it would result in a loading demand during the peak hour of loading activities that could not be accommodated within proposed on-site loading facilities or within convenient on-street loading zones, and create potentially hazardous conditions or significant delays affecting traffic, transit, bicycles, or pedestrians.

- The project would have a significant effect if it would result in inadequate emergency access.

The City and County of San Francisco does not have significance criteria related to roadway segments. In order to preserve consistency with the intersection analysis, the LOS-based criteria identified above for the study intersections were also applied to the study roadway segments.

3.0 Short-term Effects

The analysis of short-term effects evaluates conditions in Year 2020, including planned and proposed future development growth and transportation network changes in the study area, as well as background growth in travel demand in the City and region.

3.1 Methods and Assumptions

3.1.1 Background Growth

Background growth in travel demand within the Project vicinity consists of both general growth in the City and region, as well as growth from specific foreseeable developments. Background growth information is generally obtained by consulting travel demand forecasting models, which incorporate a variety of factors related to the transportation network and tripmaking behavior; land use, population, and socioeconomic characteristics; and other data in an attempt to project traffic volumes for a given forecast year.

For this study, the San Francisco Chained Activity Modeling Process (SF-CHAMP) model maintained by the San Francisco County Transportation Authority (SFCTA) was consulted in the development of background growth projections. SF-CHAMP is the standard travel demand model used to develop future-year travel forecasts for the analysis of development projects in San Francisco. SF-CHAMP is a state-of-the-art tool that models the city's transportation network (roadway and bikeway infrastructure, transit infrastructure and services, and the pedestrian environment) at a fine grain, while also comprehensively incorporating observations of city residents' travel patterns and other factors that may affect tripmaking behavior, such as vehicle ownership rates. SF-CHAMP was developed with a highly sensitive tour-based forecasting methodology that allows for trip chaining (or "trip linking"), which better replicates actual travel behavior and is more comprehensive than a traditional four-step model based on trip generation, mode split, trip distribution, and route assignment. To develop background growth projections, the SF-CHAMP model was used for both the baseline model year (2012) and forecast model year (2040).

Before estimating the background growth, the land use and socioeconomic inputs for the Traffic Analysis Zone (TAZ) containing the Project site were checked to determine whether or not the Project was already assumed in the future-year model. The Campus is located within TAZ 738, which is bounded by Clement Street/Seal Rock Drive at its southern end and encompasses all of the Campus and portions of the surrounding GGNRA land, but does not include any of the surrounding residential neighborhoods. Investigation of the changes in assumed employment levels for TAZ 738 between the baseline-year and forecast-year models confirmed that the Project was not explicitly included as part of the forecast-year model.

Traffic Forecasts

To estimate future-year traffic volumes for this study, a non-compounded annual growth rate was derived by consulting the baseline-year and forecast-year SF-CHAMP models and extracting the projected volume on the roadway links feeding into each of the study intersections. Some degree of variability was observed in the calculated growth rates. Many locations showed a negative growth rate, corresponding to a decrease in traffic between the baseline-year and future-year models. Locations with the highest calculated growth rates still only showed modest growth of about 0.25 percent per year.

To be consistent with previous studies conducted in the vicinity of the Project site, including the Presidio Trust Management Master Plan Environmental Impact Statement (May 2002),(14) a positive, conservative growth rate of 0.5 percent per year was assumed for the traffic analysis. A 0.5 percent growth rate can be considered reasonably conservative given the SF-CHAMP projections for minimal or negative growth in traffic volumes, as well as the general lack of large, undeveloped parcels in the vicinity of the Campus. The surrounding neighborhoods are largely built out, and any new growth in population or employment would likely require redevelopment of existing parcels.

(14) Final Environmental Impact Statement: Presidio Trust Management Plan – Land Use Policies for Area B of the Presidio of San Francisco (May 2002).

Transit Forecasts

Ridership projections for Muni lines serving the Campus were derived by examining ridership assignment outputs from SF-CHAMP for the baseline-year and forecast-year models. SF-CHAMP provides dedicated line-by-line boardings and alightings for each Muni line, known as “quickboards.” Similar to the development of traffic forecasts, transit ridership forecasts can be developed by calculating annual growth rates from the baseline-year model ridership to the forecast-year model ridership based on the quickboard outputs. These growth rates can then be applied to the ridership data in Table 9, adjusting for the desired horizon year, to derive future-year ridership projections.

Given the nature of travel forecasting, however, the quickboards can produce counterintuitive results—such as unexpected decreases in ridership—when attempting to analyze ridership assignments at a microscopic (i.e., line-by-line) level. As a result, a direct application of line-based growth factors calculated from SF-CHAMP is typically considered impractical. Instead, future-year ridership is typically examined at the corridor-level, and the growth rates are calculated by aggregating the quickboard data for each line in the corridor, smoothing out any potential inconsistencies in the quickboard assignments. In particular, transit service along Geary Boulevard can be considered to comprise the three lines analyzed in Table 9, together with the 38BX Geary “B” Express. A non-compounded annual growth rate for transit ridership in the Geary Corridor was thus calculated by aggregating the quickboard assignments for these four lines.

The resulting ridership forecasts for the Geary Corridor were checked against the estimated ridership in 2035 for the Geary Corridor as calculated in the Transit Effectiveness Project Draft Environmental Impact Report (July 10, 2013) (TEP DEIR) (Planning Department Case No. 2011.0558E; State Clearinghouse No. 2011112030). Minor adjustments were made as necessary to ensure consistency with the TEP DEIR.

3.1.2 Transportation Network Modifications

Included in the analysis of short-term effects are changes to the transportation network proposed by SFMTA, including those associated with the Geary Corridor Bus Rapid Transit (BRT) Project, the Transit Effectiveness Project (TEP), and the San Francisco Bicycle Plan. These projects are discussed in more detail below.

Geary Corridor Bus Rapid Transit

This project would involve major upgrades to transit service in the Geary Corridor designed to decrease travel times on transit, improve transit reliability, and improve pedestrian safety and access to transit. The project encompasses the stretch of Geary Street/O’Farrell Street and Geary Boulevard from Market Street west to 34th Avenue and proposes the following improvements:

- Improvements to transit infrastructure and service, including exclusive, high-visibility bus-only lanes for most of the route within the project extents, mostly in a side-running alignment but with a center-running alignment from Palm Avenue west to 26th Avenue. Transit signal priority and new low-floor buses would also be introduced, and bus stops would be relocated, replaced, or upgraded as needed. All-new, high-amenity platform stations would be constructed in the center-running segment and bus bulbs would be constructed in side-running segments.

- Improvements to pedestrian safety, including high-visibility treatments for crosswalks, improved signage, construction of corner bulb-outs at intersections, and measures to reduce conflict between pedestrians and left-turning vehicles.

Within the project extents, BRT stops would generally follow the existing stopping pattern for 38L services, with stops located at Kearny Street (outbound only), Stockton Street, Powell Street, Leavenworth Street, Van Ness Avenue, Fillmore Street, Divisadero Street, Masonic Avenue/Presidio Avenue, Spruce Street, Arguello Boulevard, 6th Avenue, Park Presidio Boulevard, 17th Avenue, 21st Avenue, 25th Avenue, 30th Avenue, and 33rd Avenue.

The project is expected to result in a 25 percent reduction in travel time and a 20 percent improvement in transit reliability, resulting in a 10 to 20 percent increase in ridership on the improved sections of the corridor. Construction could begin in 2017, with revenue service beginning as early as 2019, becoming Muni’s second BRT project after the Van Ness Avenue BRT.

Existing transit service in the Geary Corridor is structured around four distinct services or routes—one local service, one limited service, and two peak-period (commute) express services. Based on discussions with SFMTA staff, service in the Geary Corridor would be restructured with the commencement of BRT service into three lines operating four distinct services—one local, two limited, and one peak-period (commute) express. Each of the four services would operate with articulated buses (94 passengers per bus) at 6-minute headways during the peak hours, providing a combined total of 40 services per hour in the Geary Corridor. These services are described below.

- 38 Geary: Local service between Downtown and Fort Miley.
- 38 Geary Limited: Two limited services, one operating between Downtown and Geary Boulevard/25th Avenue and the other continuing west of 25th Avenue to Point Lobos Avenue/48th Avenue.
- 38X Geary Express: Express service between Downtown and Point Lobos Avenue/48th Avenue.

Transit Effectiveness Project

The Transit Effectiveness Project (TEP) would institute a series of sweeping, systemwide changes to Muni service to streamline operations, adapt to changes in travel patterns, and improve reliability and passenger experience. As described in the TEP DEIR, the proposed changes included the following projects:

- <u>Service Improvements</u>
  These projects include the creation of new routes, changes to the alignment of existing routes (including elimination of underutilized routes or segments), changes to frequency and service hours, changes to transit vehicle type on specific routes, changes to corridor service plans (e.g., adjustments to the scheduled mix of local, limited, and express services), and other minor changes (e.g., new stops on express services, expansion of limited service on weekends, or providing an additional day of service on weekends [e.g., Saturday or Sunday]).
- <u>Service-Related Construction Improvements</u>
  These projects represent service improvements that require investment in construction infrastructure, and include "Terminal and Transfer Point Improvements" (TTPI) (e.g., installation of new switches, installation of bus bulbs, expansion of bus layover facilities), "Overhead Wire Expansion" (OWE) (e.g., installation of new overhead wires and associated infrastructure to expand electric trolley coach service to new streets or allow electric trolley coaches to pass each other), and "Systemwide Construction Infrastructure" (SCI) (e.g., installation of new accessible platforms on the surface light rail network).
- <u>Travel Time Reduction Proposals</u>
  These projects include implementation of elements from SFMTA's Transit Preferential Streets (TPS) Toolkit—transit stop changes, lane geometry modifications, parking/turn restrictions, traffic signal and stop sign changes, and pedestrian improvements)—to 17 of the 23 corridors identified as part of Muni's "Rapid Network."

Specifically, the TEP proposes the following changes to routes in the Geary Corridor, where the weekday a.m. peak period is defined as 7:00 a.m. to 9:00 a.m., the weekday midday period as 9:00 a.m. to 2:00 p.m., and the weekday p.m. peak period as 4:00 p.m. to 6:00 p.m.:

- <u>38 Geary</u>
  Service west of 33rd Avenue (i.e., Fort Miley and 48th Avenue/Point Lobos Avenue branches) would see minor changes to headways, as follows:
  - Weekday a.m. peak period: 12 minutes → 15 minutes
  - Weekday midday period: 16 minutes → 15 minutes
  - Weekday p.m. peak period: 16 minutes → 12 minutes

  Service east of 33rd Avenue would see minor changes to headways, as follows:

- Weekday a.m. peak period: 12 minutes → 7.5 minutes
- Weekday p.m. peak period: 8 minutes → 6 minutes

- 38L Geary Limited
  Service would be expanded to operate on Sundays. Minor changes to headways would be implemented, as follows:
  - Weekday a.m. peak period: 5.5 minutes → 5 minutes
  - Weekday midday: 5.5 minutes → 5 minutes
  - Weekday p.m. peak period: 5.5 minutes → 5 minutes

- 38AX Geary "A" Express
  New stops would be added at Bush Street/Van Ness Avenue (inbound) and Pine Street/Van Ness Avenue (outbound).

- 38BX Geary "B" Express
  New stops would be added at Bush Street/Van Ness Avenue (inbound) and Pine Street/Van Ness Avenue (outbound).

San Francisco Bicycle Plan
The San Francisco Bicycle Plan (June 26, 2009) (Bike Plan) outlines a series of improvements to San Francisco's bicycle route network, as well as supporting policies related to bicycle use (e.g., bicycle parking, traffic enforcement and safety) designed to promote and increase safe bicycle use in the city. With regard to the city's bicycle route network, the Bike Plan proposes changes to existing bicycle routes (e.g., relocation or realignment of routes), as well as expansions of the bicycle route network to new streets. In particular, the Bike Plan categorizes improvements to the bicycle route network into one of three categories:

- Near-term Bicycle Improvement Projects
  A series of 60 projects intended to be implemented in the near-term time frame and for which detailed design has already been conducted.

- Long-term Bicycle Improvement Projects
  These projects are intended to be implemented in the long-term time frame, and no schedule or detailed design has been developed for these projects.

- Minor Improvements to Bicycle Route Network
  These projects are minor treatments to improve conditions for bicycle use, including projects to address gaps or deficiencies in the bicycle route network. Typical improvements include pavement treatments and signage, traffic signal adjustments, and changes to on-street parking.

In terms of improvement to the bicycle route network in the vicinity of the Project, the Bike Plan proposes the following projects:

- Near-term Bicycle Improvement Projects
  - Route 95: Great Highway and Point Lobos Avenue Bicycle Lanes, El Camino Del Mar to Cabrillo Street (Project 7-3)

- Long-term Bicycle Improvement Projects
  - Geary Boulevard between 25th Avenue and Divisadero Street

- Minor Improvements to Bicycle Route Network

- o Route 10: Lake Street between 28th Avenue and 30th Avenue
- o Route 10/95: Clement Street/Seal Rock Drive between 30th and 34th Avenue and between 43rd Avenue and El Camino del Mar, and El Camino del Mar between Seal Rock Drive and Point Lobos Avenue
- o Route 85: Legion of Honor Drive/34th Avenue between Lincoln Highway/El Camino del Mar and Cabrillo Street
- o Route 95: El Camino del Mar between 28th Avenue and El Camino del Mar (Sea Cliff Avenue) and between McLaren Avenue and 30th Avenue, and 30th Avenue between El Camino del Mar and Lake Street
- o Route 395: El Camino del Mar/Lincoln Highway between Legion of Honor Drive/34th Avenue and 30th Avenue

Since the lifting of an injunction that prevented implementation of the Bike Plan (subsequent to the data collection efforts conducted used to develop Existing Conditions for this study), many of the improvement projects have already been completed. In particular, a modified version of Project 7-3 was approved as an addendum to the San Francisco Bicycle Plan Final Environmental Impact Report (August 2009) (Planning Department Case No. 2007.0347E; State Clearinghouse No. 2008032052) on May 15, 2013, and has already been constructed.

3.2 2020 Short-term Alternative 4 Conditions

The following section summarizes the analysis results for 2020 Short-term Alternative 4 Conditions, which are presented here first because they represent the “no action” (i.e., “baseline” or “no Project”) alternative, facilitating a comparison with the action alternatives (Alternative 1, Alternative 2, and Alternative 3) in the subsequent sections to determine Project impacts. For this reason, this section focuses on topics for which potential impacts of the Project are determined through quantitative analysis—namely, intersection and roadway segment operations for traffic conditions and Muni ridership and capacity for transit conditions. Topics for impacts evaluated qualitatively—such as bicycle, pedestrian, vehicle parking, freight loading, and emergency vehicle access conditions—are not discussed in this section.

3.2.1 Traffic Conditions

Intersections

Existing Conditions traffic volumes were combined with the estimated growth in traffic by 2020 resulting from planned development both within and outside of the study area—forecasted according to the methodology described in Section 3.1.1—to develop traffic volumes for 2020 Short-term Alternative 4 Conditions. The resulting traffic volumes and LOS at the study intersections are illustrated in Figure 13 and summarized in Table 24, respectively.

Table 24: Intersection Levels of Service—2020 Short-term Alternative 4 Conditions (Weekday P.M. Peak Hour)

Intersection	Control Type	Existing Conditions		2020 Short-term Alternative 4 Conditions	
		LOS	Delay (seconds/ vehicle)	LOS	Delay (seconds/ vehicle)
1 34th Avenue/Clement Street	All-Way Stop	B	11.8	B	12.4
2 42nd Avenue/Clement Street	All-Way Stop	B	11.0	B	11.4
3 43rd Avenue/Clement Street	All-Way Stop	B	11.7	B	12.3
4 42nd Avenue/Point Lobos Avenue	All-Way Stop	B	12.4	B	13.1
5 43rd Avenue/Point Lobos Avenue	All-Way Stop	B	14.2	C	15.1

Note: LOS = level of service
Source: Data compiled by AECOM in 2014

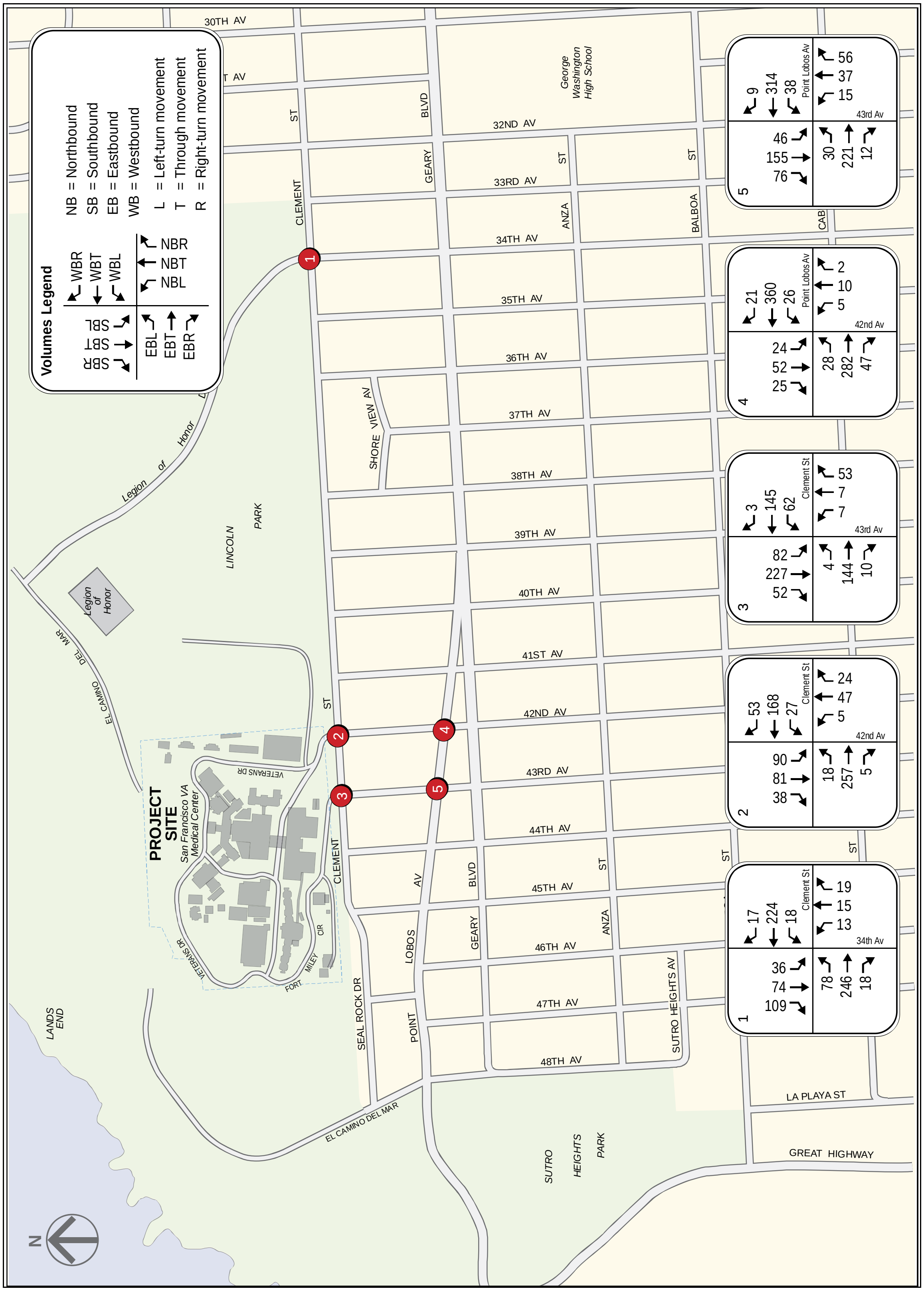

Figure 13: Intersection Traffic Volumes—2020 Short-term Alternative 4 Conditions

As shown in Table 24, all five study intersections would operate at acceptable conditions (LOS C or better) during the weekday p.m. peak hour under 2020 Short-term Alternative 4 Conditions.

Roadway Segments

The expected LOS at the two study roadway segments under 2020 Short-term Alternative 4 Conditions is summarized in Table 25. As shown in Table 25, both roadway segments would operate at acceptable conditions (LOS C or better) during the weekday p.m. peak hour under 2020 Short-term Alternative 4 Conditions.

Table 25: Roadway Segment Levels of Service—2020 Short-term Alternative 4 Conditions (Weekday P.M. Peak Hour)

Roadway Segment	Direction	Existing Conditions		2020 Short-term Alternative 4 Conditions	
		LOS	v/c Ratio	LOS	v/c Ratio
1 42nd Avenue	Northbound	A	0.16	A	0.17
Between Clement Street and Point Lobos Avenue	Southbound	A	0.24	A	0.25
2 43rd Avenue	Northbound	A	0.16	A	0.17
Between Clement Street and Point Lobos Avenue	Southbound	C	0.64	C	0.66

Notes: LOS = level of service; v/c = volume-to-capacity
Source: Data compiled by AECOM in 2014

3.2.2 Transit Conditions

Public Transit

Table 26 summarizes ridership, capacity, and capacity utilization of transit services in the Geary Corridor under 2020 Short-term Alternative 4 Conditions. As shown in Table 26, ridership would increase from Existing Conditions, but overall capacity improvements in the corridor as a result of BRT and the TEP would help to reduce overall capacity utilization.

Table 26: Muni Ridership and Capacity—2020 Short-term Alternative 4 Conditions (Weekday P.M. Peak Hour)

Direction	Existing Conditions			2020 Short-term Alternative 4 Conditions		
	Ridership	Capacity	Utilization	Ridership	Capacity	Utilization
Inbound	908	1,777	51%	1,142	2,820	41%
Outbound	1,814	2,528	72%	2,359	3,826	62%

Source: SFMTA, 2011.

Notes:
Ridership data based on conditions at the MLP for each line.

3.3 2020 Short-term Alternative 1 Conditions

The following section summarizes the analysis results for 2020 Short-term Alternative 1 Conditions. For quantitative analyses, results are compared against the results for 2020 Short-term Alternative 4 Conditions to determine any potential impacts as a result of the Project. For other analyses, conditions with the Project and any potential impacts are discussed qualitatively.

3.3.1 Operational Traffic Impacts

Intersections

The Project's estimated vehicle-trips under Phase 1 of Alternative 1, as summarized in Table 20, were added to traffic volumes for 2020 Short-term Alternative 4 Conditions to derive traffic volumes for 2020 Short-term Alternative 1 Conditions, illustrated in Figure 14. The resulting LOS at the study intersections under 2020 Short-term Alternative 1 Conditions is summarized in Table 27.

Table 27: Intersection Levels of Service—2020 Short-term Alternative 1 Conditions (Weekday P.M. Peak Hour)

Intersection	Control Type	2020 Short-term Alternative 4 Conditions		2020 Short-term Alternative 1 Conditions	
		LOS	Delay (seconds/ vehicle)	LOS	Delay (seconds/ vehicle)
1 34th Avenue/Clement Street	All-Way Stop	B	12.4	B	12.8
2 42nd Avenue/Clement Street	All-Way Stop	B	11.4	B	11.8
3 43rd Avenue/Clement Street	All-Way Stop	B	12.3	B	13.6
4 42nd Avenue/Point Lobos Avenue	All-Way Stop	B	13.1	B	13.3
5 43rd Avenue/Point Lobos Avenue	All-Way Stop	C	15.1	C	15.9

Note: LOS = level of service
Source: Data compiled by AECOM in 2014

As shown in Table 27, all five study intersections would operate at acceptable conditions (LOS C or better) during the weekday p.m. peak hour under 2020 Short-term Alternative 1 Conditions. As such, the Project would not result in significant operational impacts on any study intersections.

Roadway Segments

Roadway segment LOS for 2020 Short-term Alternative 1 Conditions is summarized in Table 28.

Table 28: Roadway Segment Levels of Service—2020 Short-term Alternative 1 Conditions (Weekday P.M. Peak Hour)

Roadway Segment	Direction	2020 Short-term Alternative 4 Conditions		2020 Short-term Alternative 1 Conditions	
		LOS	v/c Ratio	LOS	v/c Ratio
1 42nd Avenue	Northbound	A	0.17	A	0.18
Between Clement Street and Point Lobos Avenue	Southbound	A	0.25	A	0.26
2 43rd Avenue	Northbound	A	0.17	A	0.17
Between Clement Street and Point Lobos Avenue	Southbound	C	0.66	C	0.72

Notes: LOS = level of service; v/c = volume-to-capacity
Source: Data compiled by AECOM in 2014

As shown in Table 28, both roadway segments would operate at acceptable conditions (LOS C or better) during the weekday p.m. peak hour under 2020 Short-term Alternative 1 Conditions. As such, the Project would not result in significant operational impacts on any roadway segments.

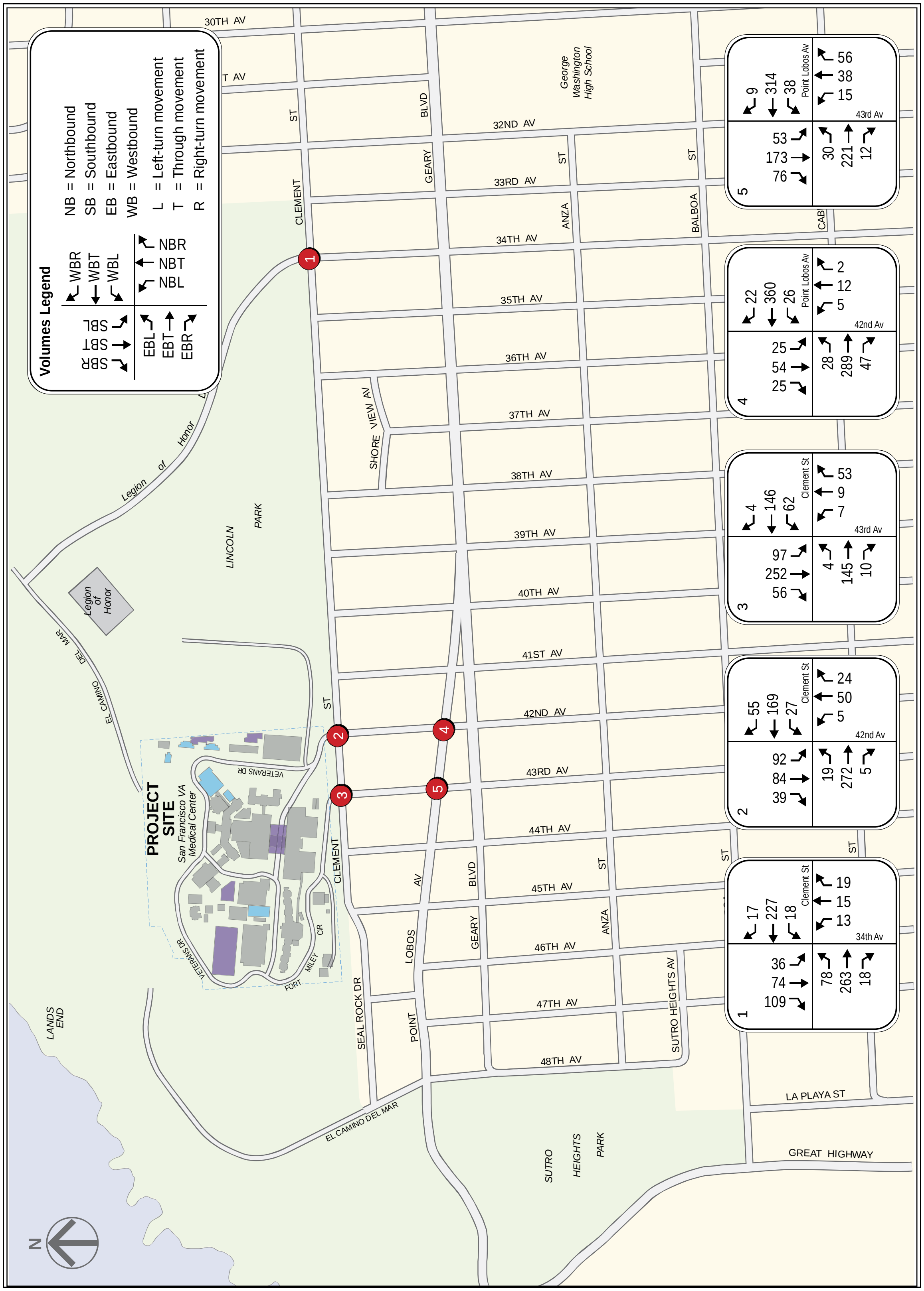

Figure 14: Intersection Traffic Volumes—2020 Short-term Alternative 1 Conditions

Passenger Vehicle Access

As described in Section 1.3.3, the Project would institute several changes to circulation on the Campus. Specifically, construction of the Patient Welcome Center would close Fort Miley Circle to through traffic and construct a new traffic circle, providing curb space for passenger pick-up and drop-off activities. Access between the east and west sides of the Campus would still be retained via Veterans Drive, although security gates would be installed on some segments surrounding proposed Building 40, effectively creating separate “employee” and “Veteran/visitor” zones on the Campus. The roadway between Building 200 and the future Building 213 would be narrowed as part of a traffic calming measure, and Fort Miley Circle west of Building 203 would be converted from one-way westbound traffic to two-way traffic.

These changes would generally improve passenger vehicle access by simplifying circulation through the Campus and segregating employee and Veteran/visitor vehicular traffic. Although a specific design for the proposed security gates near Building 40 has yet to be determined, a typical gate-processing time of 5 seconds would accommodate up to 720 vehicle movements per hour at each gate. The gates would likely be placed sufficiently within the confines of the Campus that any temporary vehicle queues that may develop would not extend outside of the Campus or cause major disruption to Campus circulation. Overall, the changes to passenger vehicle access proposed by the Project would result in, at most, only minor changes to travel times (either increase or decrease) and access routes, and would not constitute a significant operational impact on passenger vehicle access at the Campus.

East Fort Miley Access

The Project would not propose specific changes to GGNRA access to and from East Fort Miley, and the existing access road at the southwest corner of Building 212 would continue to serve traffic generated at this facility. The LRDP would implement some minor changes to the internal roadway network to better segregate employee and Veteran/visitor traffic across the Campus’s two main access points on 42nd Avenue and 43rd Avenue. However, these changes would result in, at most, only minor changes in the total traffic volumes passing through the Veterans Drive/Fort Miley Circle intersection (either increase or decrease) and would not preclude GGNRA access into and out of East Fort Miley. Overall, the Project is not expected to result in significant operational impacts on GGNRA access into and out of East Fort Miley.

3.3.2 Operational Transit Impacts

Public Transit

Ridership and Capacity Effects

As shown in Table 20, Phase 1 of Alternative 1 would generate approximately 45 net-new transit trips (six inbound to the Project site and 39 outbound from the Project site) during the weekday p.m. peak hour. As a result of the Campus’s location at the outer end of the Geary Corridor, well outside of Downtown San Francisco, the commute direction for the Project constitutes the “reverse commute” direction (i.e., traveling opposite to the general commute direction). In particular, passenger loads are substantially heavier on outbound buses in the Geary Corridor than on inbound buses in the Geary Corridor during the weekday p.m. peak hour as a result of passengers returning home from Downtown San Francisco, a trend reflected in the expected ridership and capacity utilization for 2020 Short-term Alternative 4 Conditions shown in Table 26.

Because of the Campus’s location, however, the Project would only add a maximum of six passengers to the Geary Corridor in the outbound direction during the weekday p.m. peak hour, who could easily be accommodated without exceeding the 85 percent capacity utilization threshold established by the SFMTA Board. In particular, outbound transit service in the Geary Corridor is expected to operate at only 62 percent capacity utilization under 2020 Short-term Alternative 4 Conditions, as shown in Table 26. The addition of up to six passengers as a result of the Project would represent only a 0.2 percent increase in capacity utilization. This would not constitute a material change in the capacity utilization, which would continue to remain below the 85 percent threshold at 62 percent under 2020 Short-term Alternative 1 Conditions.

The majority of Project-generated transit ridership during the weekday p.m. peak hour would be leaving the Project site. Although the Project would generate approximately 39 new transit riders in this direction, inbound transit services in the Geary Corridor only operate at 41 percent capacity utilization during the weekday p.m. peak hour. The addition of up to 39 new riders generated by the Project would only increase the capacity utilization to a maximum of 42 percent, well below the 85 percent threshold.

In addition, it is likely that only some of these 39 new transit riders would choose to take Muni buses in the Geary Corridor. As shown in Table 10, SFVAMC currently provides two commuter shuttle routes, one serving transit hubs in Downtown San Francisco and the other serving the Golden Gate Bridge Toll Plaza. Although service on these routes is generally less frequent than Muni service in the Geary Corridor, the benefits of a free transit service offering faster (and less variable) travel times, higher-amenity vehicles, and a seat for the entire journey would likely attract many of these new riders. As a result, the actual increase in capacity utilization on inbound buses in the Geary Corridor is expected to be less than as described above.

Given these considerations, the Project is not expected to result in a significant operational impact on Muni capacity in either direction in the Geary Corridor.

Other Effects

As described in Section 1.3.3, the Project would institute several changes to circulation on the Campus. In particular, construction of the Patient Welcome Center would close Fort Miley Circle to through traffic. Muni buses directly serving the Campus on the 38 Geary's Fort Miley service would no longer loop via Fort Miley Circle to 43rd Avenue when continuing back inbound to Downtown San Francisco, instead using the new traffic circle to return via 42nd Avenue. A designated stop for Muni vehicles would be provided at the traffic circle. Overall, these changes would not constitute a significant operational impact on Muni service, and instead represent benefits to Muni service, including a minor savings in travel time and fuel (and, by consequence, operating costs).

The Project's proposed circulation changes would also better segregate traffic using the Campus's two main access points, with Veterans and visitors encouraged to use the 42nd Avenue access and employees encouraged to use the 43rd Avenue access. This change would not constitute a significant operational impact on Muni service because the potential for increased conflict between buses and other vehicles would be minimal, with some potential benefits generated by the segregation of employee traffic and buses during the peak hours. In particular, the Project's expected net increase of 57 vehicle-trips as shown in Table 20 would likely not substantially affect Muni operations, and the expected increase in average delays at 42nd Avenue/Clement Street would be negligible, as shown in Table 27.

More detail regarding on-site campus circulation can be found in the Draft SFVAMC Fort Miley Campus On-site Circulation Optional Recommendations memorandum (February 11, 2014), attached as Appendix H.

SFVAMC Shuttle Services

As described in Section 1.3.3, the Project would institute several changes to shuttle access and circulation at the Campus. In particular, stops would be relocated into two new locations—one at the new Patient Welcome Center traffic circle, with dedicated stops and curbside space, and another between Building 208 and Building 209—as shown in Figure 3. Shuttles would be provided with the additional option of entering and exiting the Campus via 43rd Avenue. Overall, these changes would result in, at most, only minor changes to travel times (either increase or decrease), and would not constitute a significant operational impact on shuttle services at the Campus.

Taxi Services

As described in Section 1.3.3, the Project would institute minor changes to the internal roadway network that would affect taxi circulation on the Campus. Similar to shuttle services, taxi services would be provided with dedicated stops at the new Patient Welcome Center traffic circle and a separate location between Building 208 and Building 209. Overall, these changes would result in, at most, only minor changes to travel times (either increase or decrease), and would not constitute a significant operational impact on taxi services at the Campus.

3.3.3 Operational Bicycle Impacts

A portion of the six Project trips shown as "other" in Table 20 would be completed by bicycle. With the current bicycle and vehicular traffic volumes on the adjacent streets, bicycle travel generally occurs without major impedances or safety concerns. The Project's expected increase in bicycle trips in the area would not be substantial enough to affect overall bicycle circulation on the Campus or in the surrounding area, or the operations of adjacent bicycle facilities. Some portion of the Project's expected net increase of 57 vehicle-trips as shown in Table 20 would travel on or cross roadways with designated bikeways, but would likely not substantially increase the potential for conflicts between bicyclists and motorists.

As described in Section 1.3.3, the LRDP does not propose specific changes with regard to bicycle access on the Campus, and bicyclists would continue to be able to access the Campus as they currently do via the main access points at 42nd Avenue/Clement Street and 43rd Avenue/Clement Street. Although the LRDP would implement some minor changes to the internal roadway network, these changes would result in, at most, only minor changes to travel times (either increase or decrease), and would not conflict with existing or planned bicycle facilities outside of the Campus or constitute a hazard to bicycle users. Overall, the Project is not expected to result in significant operational impacts on bicycle conditions.

3.3.4 Operational Pedestrian Impacts

Pedestrian trips generated by the Project external to the Campus would include walk-only trips (i.e., trips completed exclusively on foot) to and from the Project site, as well as some portion of transit trips (those trips not involving transit services that physically enter and exit the Campus). Overall, the Project-generated net increase in pedestrian traffic during the weekday p.m. peak hour on the streets surrounding the Campus would comprise 20 walk trips and some portion of the 45 transit trips and 81 auto trips (for transit passengers or motorists accessing transit stops or parked vehicles at off-site locations) shown in Table 20.

Although pedestrian connections are provided into Lands End and the surrounding National Park Service lands, the majority of this traffic is expected to enter and exit the Campus via the main access points at 42nd Avenue/Clement Street and 43rd Avenue/Clement Street. With the current volumes of pedestrian traffic on the surrounding street network, the new pedestrian trips generated by the Project could be accommodated without any impacts on pedestrian safety or operations. The Project's expected net increase of 57 vehicle-trips as shown in Table 20 would also likely not substantially increase the potential for conflicts between pedestrians and vehicles, especially when distributing the traffic across two access points on the Campus at 42nd Avenue/Clement Street and 43rd Avenue/Clement Street. Both of these intersections feature all-way stop control, forcing motorists to come to a complete stop and visually check for the presence of pedestrians before proceeding through.

In addition, the Project would not conflict with existing pedestrian facilities or propose design features hazardous to pedestrians. As described in Section 1.3.3, external access to and from the Campus for pedestrians would remain unchanged, and primary access would continue to be provided via 42nd Avenue and 43rd Avenue. Within the Campus, the Project proposes some general changes to enhance pedestrian connectivity and the pedestrian realm, which are expected to improve overall pedestrian conditions on the Campus by creating new pedestrian routes, eliminating conflict points with motorized traffic, and implementing traffic calming measures to reduce vehicle speed. Overall, the Project is not expected to result in significant operational impacts on pedestrian conditions.

3.3.5 Operational Vehicle Parking Impacts

Parking conditions are not static; parking supply and demand varies from day to day, from day to night, from month to month, etc. Hence, the availability of parking spaces (or lack thereof) is not a permanent physical condition, but changes over time as people change their modes and patterns of travel. Although parking conditions change over time, a substantial deficit in parking caused by a project that creates hazardous conditions or significant delays to traffic, transit, bicycles, or pedestrians could adversely affect the physical environment. Whether a deficit in parking creates such conditions depends on the magnitude of the shortfall and the ability of drivers to change travel patterns or switch to other travel modes. If a substantial deficit in parking caused by a project creates hazardous conditions or significant delays in travel, such a condition could also result in secondary physical environmental impacts (e.g., air quality or noise impacts caused by congestion), depending on the project and its setting.

The absence of a ready supply of parking spaces, combined with available alternatives to auto travel (e.g., transit service, taxis, bicycles, or travel by foot) and a relatively dense pattern of urban development, induces many drivers to seek and find alternative parking facilities, shift to other modes of travel, or change their overall travel habits. Any such resulting shifts to transit service or other modes (walking and biking) would be in keeping with the City's "Transit First" policy and numerous San Francisco General Plan policies, including those enumerated in the Transportation Element. The City's Transit First Policy, established in Article 8A, Section 8A.115 of the City's Charter, provides that "parking policies for areas well served by public transit shall be designed to encourage travel by public transportation and alternative transportation."

This transportation analysis accounts for potential secondary effects, such as cars circling and looking for a parking space in areas of limited parking supply, by assuming that all drivers would attempt to find parking at or near the Project site and then seek parking farther away if convenient parking is unavailable. The secondary effects of drivers searching for parking is typically offset by a reduction in vehicle-trips attributable to others who are aware of constrained parking conditions in a given area, and thus choose to reach their destination by other modes (i.e., walking, biking, transit, or taxi). Should this occur, any secondary environmental impacts that may result from a shortfall in parking in the vicinity of the Project site would be minor, and the traffic assignments used in the transportation analysis, as well as in the associated air quality and noise analyses, would reasonably address potential secondary effects.

Parking Demand and Supply

Based on the results presented in Table 22, the new uses proposed by the Project would generate a demand for 132 parking spaces under 2020 Short-term Alternative 1 Conditions. As described in Section 1.3.3, the Project would provide 306 net additional spaces at the Campus in the short-term time frame, exceeding the estimated new demand under 2020 Short-term Alternative 1 Conditions by 174 spaces.

Although some of these spaces would effectively "recapture" spillover demand generated by existing uses at the Campus that currently use on-street parking in the surrounding neighborhood, it should be noted that the proposed supply of new spaces would exceed the parking provision ratio for the Campus under Existing Conditions. In particular, as published in the LRDP, the site currently houses 987,500 square feet in existing habitable building inventory (as of June 7, 2012) and provides 1,253 parking spaces (as of 2012), resulting in a ratio of approximately 1.27 spaces per 1,000 square feet. The Project (Phase 1 and Phase 2), however, would result in a net increase of approximately 152,500 square feet in habitable building inventory and 306 parking spaces, equivalent to approximately 2.00 spaces per 1,000 square feet.

As indicated in Table 3 and discussed in Section 1.3.3, there would be a slight reduction in the total capacity of visitor and patient parking on the Campus. The overall magnitude of this reduction, however, is relatively small and would be offset by improved pick-up and drop-off access that would result from the proposed new traffic circle that would be adjacent to the proposed Patient Welcome Center. Overall parking capacity on the Campus would still increase. SFVAMC would be able to repurpose additional Campus parking currently identified for employee use by Table 3 for patient and visitor use, either temporarily or permanently, should the parking demand for Campus patients and visitors exceed the supply of designated spaces.

Planning Code Guidance

Although not explicitly required because the Project is a federal action, the Planning Code was also consulted regarding requirements for the provision of off-street (i.e., on-Campus) parking. The following three land use categories from the Planning Code, listed with their associated requirement for off-street parking supply, were determined to be the most comparable proxies for the uses proposed by the Project:

- Offices or studios of architects, engineers, interior designers, and other design professionals and studios of graphic artists: One space for each 1,000 square feet of occupied floor area, where the occupied floor area exceeds 5,000 square feet.

- Medical or dental office or outpatient clinic: One space for each 300 square feet of occupied floor area, where the occupied floor area exceeds 5,000 square feet.

- Residential care facility: In RH-1 and RH-2 districts, one for each 10 residents, where the number of residents exceeds nine.[15]

Each subphase of the LRDP was cross-referenced to one of the three uses above to determine the associated requirements for off-street parking supply according to the Planning Code. The results are summarized in Table 29 and the calculations are included in Appendix G.

As shown in Table 29, the Project would be required to provide 206 new parking spaces: 102 spaces for uses classified as "office," 94 spaces for uses classified as "medical office/clinic," and 10 spaces for uses classified as "residential care facility." As noted, the Project proposes to provide 306 net new parking spaces under 2020 Short-term Alternative 1 Conditions. Therefore, the Project's proposed parking supply would exceed the Planning Code requirements for the Project.

Table 29: Planning Code Requirements for Off-Street Parking Supply—Alternative 1 (Phase 1)

Subphase		Action	Planning Code Land Use[1] [2]	Net-New Gross Area in square feet	Required Supply in spaces
Short-term (Phase 1)					
1.1	Building 211: Emergency Operations Center/Parking Garage	Construction	EOC to be operated by existing staff (no new parking demand) Parking garage not a habitable space		
1.2	Trailer 17	Removal	Office	12,500	13
	Building 41: Research	Construction			
1.3	Buildings 5 and 7	Seismic Retrofit	Renovation of existing building/space		
1.4	Buildings 9 and 10	Seismic Retrofit	Renovation of existing building/space		
	Building 22: Hoptel	Construction	Residential care facility	8,700	0
1.5	Buildings 209 and 211: Parking Garage Extensions	Construction	Not a habitable space		
1.6	Building 203: C-Wing Extension (Ground-Floor Patient Welcome Center)/Drop-Off Area with Canopy Structure	Construction	Medical office/clinic	7,100	24
1.7	Building 200: Expansion (Operating Room D-Wing)	Construction	Medical office/clinic	5,300	18
1.8	Building 20	Demolition	Currently used as storage (no parking assumed)		
	Building 24: Mental Health Clinical Expansion	Construction	Medical office/clinic	15,600	52
1.9	Building 18	Demolition	Grouped under Building 40	(9,700)	Grouped under Building 40
	Building 14	Demolition		(6,400)	
	Building 21	Demolition		(1,700)	
	Trailer 23	Removal		(900)	
	Structure 206: Water Tower	Installation	Not a habitable space		
	Structure 206: Water Tower	Removal	Not a habitable space		
	Building 40: Research	Construction	Office	110,000	91
1.10	Building 207: Expansion (IT Support Space)	Construction	Office	7,000	7
1.11	Trailer 31	Removal	Medical office/clinic	(1,500)	(0)
	Building 43: Research and Admin.	Construction	Office	15,000	15
1.12	Trailer 36: New Modular	Installation	Office	2,200	0

[15] Although the Fort Miley Campus is officially located within a "P" (Public) zoning district, blocks in the surrounding neighborhood are located within RH-1 and RH-2 zoning districts. Given that any demand not met on the site will spill over into the surrounding neighborhood, the requirements for RH-1 and RH-2 districts have been applied for these uses. Resident/patient capacity of these facilities was calculated based on 1,000 square feet per resident/patient.

1.13	Building 23: Mental Health Research Expansion	Construction	Office	15,000	15
1.14	Building 203: Extension (Psychiatric Intensive Care Unit C-Wing)	Construction	Medical office/clinic	1,200	0
1.15	Trailer 24	Removal	Medical office/clinic	(1,000)	(0)
	Building 208: Extension (Community Living Center/National Cardiac Device Surveillance Center)	Construction	Residential care facility	10,000	10
1.16	Building 8	Seismic Retrofit	Renovation of existing building/space		
	Building 1	Seismic Retrofit	Renovation of existing building/space		
	Building 6	Seismic Retrofit	Renovation of existing building/space		
1.17	Building 12	Demolition	Office	(38,900)	(39)
Total					206

Source: VA, 2014b; Data compiled by AECOM in 2014

Notes:

EOC = Emergency Operations Center; IT = information technology

Numerical values enclosed in parentheses indicate negative values (demolition of building/structure or reduction in spaces).

(1) "Office" = Offices or studios of architects, engineers, interior designers and other design professionals, and studios of graphic artists
"Medical office/clinic" = Medical or dental office or outpatient clinic

(2) Where projects within the same subphase have been classified as the same land use according to the Planning Code, the calculation of the required parking supply is calculated based on the total (net) square footage of the projects. Where projects within the same subphase have been classified as different land uses according to the Planning Code, the required parking supply is calculated separately for the projects.

In summary, the Project (as part of 2020 Short-term Alternative 1 Conditions) would not result in a substantial parking deficit with the off-street parking currently proposed, and would supply parking at higher provision ratios than currently exist on the Campus for existing uses at the site.

In addition, the proposed off-street parking supply would not create hazardous conditions or significant delays affecting traffic, transit, bicycles, or pedestrians, and would not render use of transit or other alternative modes infeasible. As described in Section 1.3.3, the proposed parking would be provided in Building 209 and Building 211, located in the western half of the Campus. The existing access points to the Campus at 42nd Avenue/Clement Street and 43rd Avenue/Clement Street would remain unchanged; the LRDP would not construct new access points to serve these new parking facilities.

The circulation changes proposed by the Project and the segregation of the Campus into separate zones for employees and Veterans/visitors, each with its own dedicated access point (43rd Avenue for employees and 42nd Avenue for Veterans/visitors), would minimize the effects of traffic heading to and from these parking facilities on transit vehicles and other Campus users.

Given these considerations, the Project is not expected to result in significant operational impacts related to parking.

3.3.6 Operational Freight Loading Impacts

As described in Section 1.3.3, the LRDP does not propose specific changes to Campus access for freight loading and service/delivery vehicles. These vehicles continue to be able to enter and exit the Campus via the existing access points at 42nd Avenue/Clement Street and 43rd Avenue/Clement Street. Although the LRDP would implement some minor changes to the internal roadway network, these changes would result in, at most, only minor changes to travel times (either increase or decrease) and access routes for trucks serving the Campus. For many buildings on Campus, however, access would remain unchanged, and service and delivery vehicles—such as delivery trucks serving the Canteen in Building 7—would continue to be able to access the Campus as they currently do. Overall, the Project is not expected to result in significant operational impacts on freight loading conditions.

As discussed in Section 1.3.3 and Section 2.1.3, specific details regarding the future provision of freight loading spaces will be determined as each specific LRDP component enters the design and implementation phase. As mentioned previously, some of the proposed facilities may require specific freight loading needs or design features that cannot be fully evaluated until a more detailed design is available. As such, it is assumed that impacts related to the demand and supply of freight loading spaces or the accessibility and usability of freight loading facilities (and any associated off-Campus effects) would be evaluated at a later time as part of project-level environmental reviews for specific LRDP subphases.

3.3.7 Operational Emergency Vehicle Access Impacts

As described in Section 1.3.3, fire department access on the Campus would remain unchanged under the LRDP. For emergency medical access, ambulances would be rerouted to enter the Campus via the 43rd Avenue entrance (instead of via the 42nd Avenue entrance as they currently do), but would still have access to the Emergency Department located in the "D" Wing of Building 200. The LRDP would also implement minor changes to circulation within the Campus, which would affect how fire engines and trucks choose to access specific buildings or facilities on Campus when responding to emergencies. For example, the closure of through-access along Fort Miley Drive and the creation of the new Patient Welcome Center may require the removal of bollards (or other movable obstructions or features) during emergency situations to facilitate direct fire response access to portions of Building 200 or Building 203. Overall, these changes would result in, at most, only minor changes to travel times (either increase or decrease) and access routes; they would not eliminate emergency vehicle access to Campus facilities. As a result, these changes would not constitute a significant operational impact on emergency vehicle access.

3.3.8 Construction Impacts

This section evaluates the potential construction impacts of Phase 1 of the Project under Alternative 1 and includes the following components:

- Identification of haul truck routes to be used during construction
- Estimation of temporary traffic and parking demand, including haul truck and construction worker traffic, that would be generated during construction
- Identification of mitigation measures, such as overflow parking and other management strategies, to accommodate the temporary traffic and parking demand generated by construction activities and any associated loss of parking supply on the Campus

As Alternative 2 would have slightly different construction phasing than Alternative 1, this section also evaluates potential construction impacts of Phase 1 of the Project under Alternative 2.

More detail on Campus traffic and parking management during LRDP construction-related activities can be found in San Francisco Veterans Affairs Medical Center (Fort Miley Campus) Long Range Development Plan — Construction Traffic and Parking Management Plan (April 22, 2014) (Construction Traffic and Parking Management Plan), attached as Appendix I.

Construction-Related Haul Truck Routes

Haul trucks traveling to and from the Campus during construction would be expected to use truck traffic routes established by SFMTA. In particular, SFMTA has developed the San Francisco Truck Traffic Routes map (2010), a conceptual route map of truck traffic routes in San Francisco, for inclusion by the City and County of San Francisco in its next update to the General Plan. Specifically, the map identifies potential routes for trucks traveling through the City, focusing on regional freeways/highways and surface arterials. Based on this map, large trucks would be expected to use the following routes:

- From points north of the Campus: U.S. 101 → SR 1 (Veterans Boulevard/Park Presidio Boulevard) → Geary Boulevard → Point Lobos Avenue → 42nd Avenue or 43rd Avenue
- From points south of the Campus: I-280 → SR 1 (Junipero Serra Boulevard/19th Avenue/Crossover Drive/Park Presidio Boulevard) → Geary Boulevard → Point Lobos Avenue → 42nd Avenue or 43rd Avenue; or, alternatively,

U.S. 101 (Bayshore Freeway/Central Freeway) → Mission Street → U.S. 101 (Van Ness Avenue) → Geary Boulevard → Point Lobos Avenue → 42nd Avenue or 43rd Avenue

- From points east of the Campus: I-80 → U.S. 101 (Central Freeway) → Mission Street → U.S. 101 (Van Ness Avenue) → Geary Boulevard → Point Lobos Avenue → 42nd Avenue or 43rd Avenue

These routes would minimize the impacts of haul track activity farther away from the Campus. Still, haul truck activity could result in temporary but significant impacts, either at the Campus itself or in the immediate vicinity, on traffic and transportation and vehicle parking, as well as air quality, noise, and vibration.

Impact TRANS-CONST-1a: Haul trucks generated by construction-related activities at the Campus could result in temporary but significant impacts related to traffic and transportation, vehicle parking, air quality, noise, and vibration at the Campus itself or in the immediate vicinity.

Mitigation Measure TRANS-CONST-1a: SFVAMC should use only a combination of the three haul truck routes identified above for LRDP construction-related activities—use of alternative routes, particularly through the surrounding neighborhoods, should be actively discouraged. SFVAMC and its construction contractors should monitor truck arrivals and, if necessary, implement a queue abatement program to ensure that haul trucks do not queue up and idle on the Campus or on adjacent or nearby streets, minimizing adverse effects on traffic and transportation, vehicle parking, air quality, noise, and vibration. Implementation of Mitigation Measure TRANS-CONST-1a would mitigate Impact TRANS-CONST-1a to less-than-significant levels.

Construction-Related Traffic and Parking Demand

Construction-Period Parking Capacity

To implement some of the subphases identified in the LRDP, portions of the on-Campus parking areas may require temporary conversion for various construction-related activities such as excavation, staging of equipment and materials, and installation of temporary modular structures for a limited time period. These activities would result in a temporary loss of on-site parking capacity, as illustrated for specific subphases in Table 1. When combined with increased parking demand on the site from construction workers, vendors, and other construction-related traffic, this temporary loss in on-site parking capacity would generally intensify the parking situation at the Campus.

To alleviate some of the loss in parking capacity during on-Campus construction activities, SFVAMC is currently providing valet parking at its two primary on-site parking structures, Building 209 and Building 212. The LRDP proposes to continue providing valet parking until the end of construction of Subphase 1.9 (i.e., through December 2018 under Alternative 1), as described in Section 1.3.3. This measure would partially offset the temporary loss in parking capacity and reduce spillover effects into the surrounding neighborhood.

Construction Traffic Estimation Methodology

Detailed construction plans have not yet been developed for most of the subphases identified in the LRDP. As a result, estimates of traffic during construction of various subphases are currently unavailable. To assess the potential impacts of construction-related traffic, estimates of both vendor/haul truck trips and construction worker trips were developed based on the California Emissions Estimator Model (CalEEMod) Version 2013.2.2, the accepted model for modeling construction-related air quality and greenhouse gas emissions in California, published and maintained by the California Air Pollution Control Officers Association (CAPCOA) (2013).

Vendor/haul truck traffic was estimated for four different construction actions: demolition, seismic retrofit, construction, and removal/installation. Construction worker trips were estimated for each of six different construction phases: demolition, site preparation, grading, building construction, architectural coating, and asphalt paving. General assumptions were made regarding building envelope (volume), haul truck capacity, and construction duration, and combined with CalEEMod recommended standards for equipment needs and construction worker vehicle-trip factors. Additional adjustments to the construction traffic estimates were made to account for major earthwork/grading (cut-and-fill) activities associated with some subphases of the LRDP. More detail on the traffic estimation methodology is provided in the Construction Traffic and Parking Management Plan.

Construction Traffic Estimates

As described in Section 1.3.2 and summarized in Table 1, Alternative 1 and Alternative 2 would be equivalent in terms of gross square footage, building locations, and intended building function in the LRDP horizon year (2030), but would have different construction phasing plans, schedules, and temporary modular swing-space programs.

Under Phase 1 of Alternative 1, vendor and haul truck traffic would peak at 36 vehicles (72 trips) per day in December 2015, and construction worker trips would peak at 72 vehicles (144 trips) per day in December 2015. As a result, construction activities under Phase 1 of Alternative 1 would generate their maximum traffic volumes in December 2015, with as many as 108 vehicles (216 trips) in one day. Under Phase 1 of Alternative 2, vendor and haul truck traffic would peak at 36 vehicles (72 trips) per day in January 2016, and construction worker trips would peak at 64 vehicles (128 trips) per day in January 2016. As a result, construction activities under Phase 1 of Alternative 2 would generate their maximum traffic volumes in January 2016, with as many as 100 vehicles (200 trips) in one day. Under both alternatives, construction traffic in other months would generally be much lower than the peak month, with most months generating a maximum traffic volume that would not exceed 50 vehicles (100 trips) in one day.

The pending completion of Building 211 (Emergency Operations Center/Parking Garage) in July 2014 would increase parking capacity on the Campus by 200 spaces. This increased parking capacity is intended primarily to accommodate future growth on the Campus and existing spillover demand in the surrounding residential neighborhoods, but would also likely be able to accommodate most of the temporary parking demand generated by construction-related activities.

In addition, it is anticipated that the actual maximum parking demand generated by construction-related activities on any one day during the peak month of construction traffic (December 2015) would be substantially less than 100 vehicles. In particular, although most construction workers would require parking spaces for the entire day, vendor trucks may require parking spaces for only short periods of time to deliver materials or equipment or perform contracted tasks. This may allow for some potential to share parking spaces during the day as turnover occurs. Haul trucks importing or exporting soil or debris would remain at the Campus for only short periods of time, and therefore would not be expected to require dedicated parking spaces.

As stated previously, SFVAMC would continue to provide valet parking until the end of Subphase 1.9, providing an additional 180 spaces of parking capacity even after Building 211 has been completed but before the full LRDP has been implemented. Therefore, there would likely be sufficient on-site parking capacity to accommodate the estimated temporary increase in parking demand that would result from construction-related activities. The subsequent (March 2016) completion of the Building 209 and Building 211 extensions under Subphase 1.5 would further increase on-site parking capacity by 250 spaces, which would likely be sufficient to accommodate the parking demand generated by construction of subsequent subphases of the LRDP. However, because of limitations in the construction traffic estimation methodology, unforeseen circumstances such as delays or other necessary changes to the construction schedule, or other factors, there is still some potential for the temporary increase in parking demand generated by construction-related activities to exceed the available on-site parking supply.

Impact TRANS-CONST-1b: Although on-site parking capacity at the Campus would likely be sufficient to accommodate any temporary increase in parking demand generated by construction-related activities, there is still some potential that the increased parking demand generated by these activities may exceed the available on-site parking supply due to limitations in the construction traffic estimation methodology, unforeseen circumstances such as delays or other necessary changes to the construction schedule, or other factors. Such a situation could potentially result in temporary but significant impacts on traffic and transportation and vehicle parking at the Campus itself or in the immediate vicinity.

Mitigation Measure TRANS-CONST-1b: SFVAMC should conduct supplementary surveys of parking occupancy several weeks after completion of Building 211 to determine the utilization of the new parking structure and overall occupancy of on-site facilities throughout the day. The survey should also consider on-street parking in the surrounding area to estimate how much spillover demand has been “recaptured” on the site as a result of the increased parking supply. As construction plans for specific subphases of the LRDP are developed, construction contractors should work with SFVAMC to compare their own estimates of construction-related traffic and parking demand to the estimated parking capacity and surveyed occupancy levels, to determine whether additional temporary measures are required to mitigate expected parking constraints.

Should these coordination efforts indicate that construction activities could result in a major parking deficit on the Campus, SFVAMC should implement measures to ensure that construction-related parking demand, as well as any associated parking loss in on-site parking capacity required to accommodate construction-related activities, do not result in additional spillover into the surrounding neighborhood beyond current conditions.

Some or all of the following programs (or other measures as deemed necessary and adequate to ensure that there is no increase in spillover parking demand into the surrounding neighborhood beyond current conditions) could be implemented by SFVAMC:

- Expand the Campus valet parking program. To alleviate the loss in on-site parking capacity as a result of on-Campus construction activities, SFVAMC currently operates a valet parking program in Building 209 and Building 212. After completion of Building 211, this program could be made permanent and expanded to include the new parking structure. Based on the estimates provided in the LRDP, Building 211 would provide a total of 461 marked spaces, but a valet parking program for this structure could provide approximately 140 additional spaces, based on the 30 percent increase in parking efficiency documented in field surveys of parking occupancy in Building 209.

- Require general contractors to establish carpool/vanpool programs and encourage transit use. Because some construction workers reside outside of San Francisco, a vanpool service could be tailored to meet worker needs by operating as a “commuter shuttle” to major transit facilities, such as the Bay Area Rapid Transit (BART) stations at Civic Center or 16th Street/Mission. To encourage transit use among construction workers, the contractor could provide free or discounted transit passes. A vanpool service could also be implemented in conjunction with a remote (i.e., off-site) “park-and-ride” facility, affording construction workers some of the convenience of a private vehicle and reducing some of the construction-related traffic effects in the immediate vicinity of the Campus. To implement such a solution, SFVAMC could purchase property to serve this purpose, or work along with its contractor to negotiate with the relevant property owners and parking operators to lease spaces in an off-site surface lot or parking structure for a fixed period of time. The vanpool service could be contracted out to a third-party service provider, operating on a fixed schedule during the morning and evening commute periods and on an on-call basis during the midday period, similar to existing contracts to provide the commuter shuttle routes listed in Table 10.

- Require general contractors to optimize staging-area needs and coordinate vendor arrival schedules. In the development of construction plans, contractors should be required to optimize site utilization and schedule arrivals to minimize the associated traffic and vehicle parking impacts on the Campus community and surrounding neighborhoods.

Implementation of Mitigation Measure TRANS-CONST-1b would mitigate Impact TRANS-CONST-1b to less-than-significant levels.

As part of Alternative 1 as described in Table 1 and Section 1.3.2, temporary modular swing space would be provided in four separate locations on the Campus, including Lot B. Lot B currently provides patient and visitor parking, including most of the Campus’s Americans with Disabilities Act (ADA)–compliant spaces for patients and visitors. Use of this parking facility to accommodate temporary modular structures during Campus construction would require the temporary provision of replacement ADA spaces elsewhere on the Campus or other measures to ensure ADA compliance.

Impact TRANS-CONST-1c: Use of Lot B to accommodate temporary modular structures during Campus construction would substantially reduce the Campus’s existing supply of ADA spaces for patients and visitors, which would result in a significant impact on vehicle parking at the site for these Campus users.

Mitigation Measure TRANS-CONST-1c: SFVAMC will implement temporary strategies to ensure ADA compliance while Lot B is in use for modular swing space. Potential strategies could include temporarily striping ADA spaces in other parking facilities on the Campus, such as Building 212, or implementing valet parking at the traffic circle outside the Patient Welcome Center for patients and visitors requiring ADA accommodations.

Implementation of Mitigation Measure TRANS-CONST-1c would mitigate Impact TRANS-CONST-1c to a less-than-significant level.

Construction-Related Effects on Traffic, Transit, and Pedestrian Circulation

It is anticipated that LRDP construction activities would take place primarily Monday through Friday between 7:30 a.m. and 6:00 p.m. Any Saturday work is assumed to occur between 8:00 a.m. and 4:00 p.m. on an as-needed basis, in compliance with the San Francisco Noise Control Ordinance (Article 29 of the City and County of San Francisco Police Code) and San Francisco Department of Building Inspection permit conditions. It is anticipated that no regular travel lanes or Muni bus stops would need to be closed or relocated during the LRDP construction period. Because detailed construction plans for each of the LRDP subphases have yet to be developed, however, there is still some potential for construction-related activities to result in temporary disruptions to circulation within or in the vicinity of the Campus for traffic, transit, and pedestrians. In particular, the placement of temporary swing space in Lot B under Alternative 1 may cause some disruption to circulation on the east side of the Campus, the primary access for Veterans and visitors. In addition, construction-related activities taking place simultaneously and/or close to each other could amplify the effects of these activities on Campus circulation. While these effects would generally not be substantial enough to constitute a significant impact, the following improvement measure is recommended to alleviate these effects.

Improvement Measure TRANS-CONST-1a: Should construction activities require the closure of sidewalks or other pedestrian facilities within or outside of the Campus, protective measures should be implemented and equipment erected to ensure pedestrian safety. In high-conflict areas (either vehicle/pedestrian or vehicle/vehicle) such as access gates into construction sites, flag workers should be deployed to minimize traffic and pedestrian disruption and ensure the safety of Campus users.

Should it be determined that any travel lanes would require closure during construction, the lane closures should be coordinated with the City to minimize impacts on local traffic. In general, temporary traffic and transportation changes must be coordinated through SFMTA's Interdepartmental Staff Committee on Traffic and Transportation (ISCOTT) and require a public meeting. As part of this process, the construction management plan may be reviewed by SFMTA's Transportation Advisory Committee to resolve internal differences between different transportation modes. SFVAMC would follow the Regulations for Working in San Francisco Streets ("The Blue Book") (2012) and would reimburse SFMTA for the costs of installation and removal of temporary striping and signage changes required during Project construction.

SFVAMC and its construction contractors would need to meet with SFMTA, the San Francisco Fire Department, the San Francisco Planning Department, and other City agencies to determine feasible measures to reduce any construction-related effects, including any potential transit disruption and pedestrian circulation impacts during LRDP construction. To this effect, SFVAMC and its construction contractor(s) should consider implementing the following measures:

- Schedule most construction-related travel (i.e., deliveries, hauling, and worker trips) to occur during off-peak hours.
- Develop on-site detour routes to facilitate traffic movement through construction zones.
- Where feasible, temporarily restripe roadways—such as turn lanes, through lanes, and parking lanes—at affected locations to minimize driver confusion and optimize traffic flow.
- Where feasible, temporarily remove on-street parking to secure adequate traffic flow at those locations affected by construction closures.

- Post signage to encourage drivers to proceed at slower, safer travel speeds through construction zones.

- Develop and implement an outreach program to inform the general public about the construction process and planned roadway closures.

Under Alternative 1, SFVAMC will also prepare and implement measures to minimize effects on circulation for traffic, transit, bicycles, pedestrians, and emergency vehicles in and around Lot B while temporary modular swing space occupies this site. Lot B and the adjacent section of Veterans Drive are currently designed with a one-way circulation pattern (northbound traffic along the east edge of the lot, southbound traffic along the west side of the lot); however, the presence of modular structures at this location, existing curbside parking activities, and the loss of parking capacity at Lot B could result in temporary disruption of circulation through this part of the Campus. Potential measures could include the following:

- Enhance signage and striping to reinforce the current one-way circulation pattern around Lot B.

- Discourage illegal parking, whether curbside along the east side of Veterans Drive adjacent to Building 8 (Mental Health) and Building 9 (Hoptel) or elsewhere in and around Lot B.

- Temporarily relocate curbside parking along the east side of Veterans Drive to other parts of the Campus.

- Temporarily convert any remaining parking spaces in Lot B from perpendicular parking to parallel parking.

Pedestrian crossings at blind spots or locations with limited visibility for drivers (such as between modular structures) should also be discouraged, or properly designed with high-visibility markings and signage that force drivers to slow or stop. Adequate access for ambulances transporting patients to the Campus and emergency vehicles responding to Campus emergencies should be preserved at all times. Specific details of temporary measures to address any potential effects on Campus circulation should be discussed between SFVAMC and the general contractors during the construction planning process, at which time the magnitude of such effects can be more readily ascertained.

Although temporary modular swing space would be provided at a single location under Alternative 2 (at the site of the current Building 12 and future Building 213), similar measures to those cited above for Alternative 1 should be implemented as needed to minimize the effects of construction-related activities on traffic, transit, bicycle, pedestrian, and emergency vehicle circulation. In particular, measures should be taken to ensure adequate safety and access for pedestrians crossing between Building 12 and surrounding facilities such as Building 200, Building 203, and Building 208. Illegal parking should be discouraged, and existing perpendicular parking may need to be converted to parallel parking or temporarily closed to minimize effects on Campus circulation.

Construction-related activities occurring simultaneously and/or close to each other on the Campus could amplify the effects of these activities on overall Campus circulation. For example, the construction of the Building 209 and Building 211 extensions under Subphase 1.5 (March 2015 to March 2016) would partially overlap with the construction of Building 40 under Subphase 1.9 (December 2015 through December 2018). The close proximity of these two sites may affect constructability or on-Campus haul truck routes. In these cases, SFVAMC should serve as a liaison between the various general contractors for each construction project for coordination of construction-related activities to minimize potential secondary effects on Campus circulation. SFVAMC should work collaboratively with contractors to secure adequate haul truck access and minimize disruption to Campus user access, considering a variety of potential solutions such as limiting haul truck access to specific Campus access points or Campus roadways. In the case of Building 40 and the Building 209 and Building 211 extensions, for example, haul trucks could be restricted to the Campus's 43rd Avenue entrance, minimizing any impacts on circulation in the patient/visitor zone of the Campus.

3.4 2020 Short-term Alternative 3 Conditions

The following section summarizes the analysis results for 2020 Short-term Alternative 3 Conditions. Because both Alternative 1 and Alternative 3 propose the same series of actions in the short-term time frame (Phase 1), potential impacts would be as discussed for 2020 Short-term Alternative 1 Conditions in Section 3.3.

3.4.1 Operational Traffic Impacts

Any operational traffic impacts under 2020 Short-term Alternative 3 Conditions would be similar to those under 2020 Short-term Alternative 1 Conditions, as summarized in Section 3.3.1.

3.4.2 Operational Transit Impacts

Any operational transit impacts under 2020 Short-term Alternative 3 Conditions would be similar to those under 2020 Short-term Alternative 1 Conditions, as summarized in Section 3.3.2.

3.4.3 Operational Bicycle Impacts

Any operational bicycle impacts under 2020 Short-term Alternative 3 Conditions would be similar to those under 2020 Short-term Alternative 1 Conditions, as summarized in Section 3.3.3.

3.4.4 Operational Pedestrian Impacts

Any operational pedestrian impacts under 2020 Short-term Alternative 3 Conditions would be similar to those under 2020 Short-term Alternative 1 Conditions, as summarized in Section 3.3.4.

3.4.5 Operational Vehicle Parking Impacts

Any operational vehicle parking impacts under 2020 Short-term Alternative 3 Conditions would be similar to those under 2020 Short-term Alternative 1 Conditions, as summarized in Section 3.3.5.

3.4.6 Operational Freight Loading Impacts

Any operational freight loading impacts under 2020 Short-term Alternative 3 Conditions would be similar to those under 2020 Short-term Alternative 1 Conditions, as summarized in Section 3.3.6.

3.4.7 Operational Emergency Vehicle Access Impacts

Any operational emergency vehicle access impacts under 2020 Short-term Alternative 3 Conditions would be similar to those under 2020 Short-term Alternative 1 Conditions, as summarized in Section 3.3.7.

3.4.8 Construction Impacts

Any construction impacts under 2020 Short-term Alternative 3 Conditions would be similar to those under 2020 Short-term Alternative 1 Conditions, as summarized in Section 3.3.8.

3.5 2020 Short-term Conclusions

The operation of new facilities and structures proposed under Phase 1 of the LRDP is not expected to result in any significant operational impacts on traffic, transit, bicycle, pedestrian, vehicle parking, freight loading, or emergency vehicle access conditions. However, construction-related activities in the short-term time frame could potentially result in temporary but significant impacts on traffic and transportation, vehicle parking, air quality, noise, and vibration at the Campus itself or in the immediate vicinity. These impacts and associated mitigation measures are discussed in more detail in Section 3.3.8.

4.0 Long-term Effects

The analysis of long-term effects evaluates conditions in Year 2027, including planned and proposed future development growth and transportation network changes in the study area, as well as background growth in travel demand in the City and region.

4.1 Methods and Assumptions

4.1.1 Background Growth

The methodologies used to develop traffic and transit forecasts in the long-term time frame are identical to those used for the short-term time frame, as summarized in Section 3.1.1.

4.1.2 Transportation Network Modifications

The analysis of long-term effects includes the same changes to the transportation network identified in the analysis of short-term effects, summarized in Section 3.1.2. No additional relevant changes to the transportation network by Year 2027, beyond what was identified for the short-term analysis, were identified for the long-term analysis.

4.2 2027 Long-term Alternative 4 Conditions

The following section summarizes the analysis results for 2027 Long-term Alternative 4 Conditions, which is presented here first because it represents the "no action" (i.e., "baseline" or "no Project") alternative, facilitating a comparison with the action alternatives (Alternative 1, Alternative 2, and Alternative 3) in the subsequent sections to determine Project impacts. For this reason, this section focuses on topics for which potential impacts of the Project are determined through quantitative analysis—namely, intersection and roadway segment operations for traffic conditions and Muni ridership and capacity for transit conditions. Topics for impacts evaluated qualitatively—such as bicycle, pedestrian, vehicle parking, freight loading, and emergency vehicle access conditions—are not discussed in this section.

4.2.1 Traffic Conditions

Intersections

Traffic volumes and LOS at the study intersections under 2027 Long-term Alternative 4 Conditions are illustrated in Figure 15 and summarized in Table 30.

Table 30: Intersection Levels of Service—2027 Long-term Alternative 4 Conditions (Weekday P.M. Peak Hour)

Intersection		Control Type	Existing Conditions		2020 Short-term Alternative 4 Conditions		2027 Long-term Alternative 4 Conditions	
			LOS	Delay (seconds/ vehicle)	LOS	Delay (seconds/ vehicle)	LOS	Delay (seconds/ vehicle)
1	34th Avenue/Clement Street	All-Way Stop	B	11.8	B	12.4	B	12.9
2	42nd Avenue/Clement Street	All-Way Stop	B	11.0	B	11.4	B	11.8
3	43rd Avenue/Clement Street	All-Way Stop	B	11.7	B	12.3	B	12.8
4	42nd Avenue/Point Lobos Avenue	All-Way Stop	B	12.4	B	13.1	B	13.7
5	43rd Avenue/Point Lobos Avenue	All-Way Stop	B	14.2	C	15.1	C	16.2

Note: LOS = level of service
Source: Data compiled by AECOM in 2014

As shown in Table 30, all five study intersections would operate at acceptable conditions (LOS C or better) during the weekday p.m. peak hour under 2027 Long-term Alternative 4 Conditions.

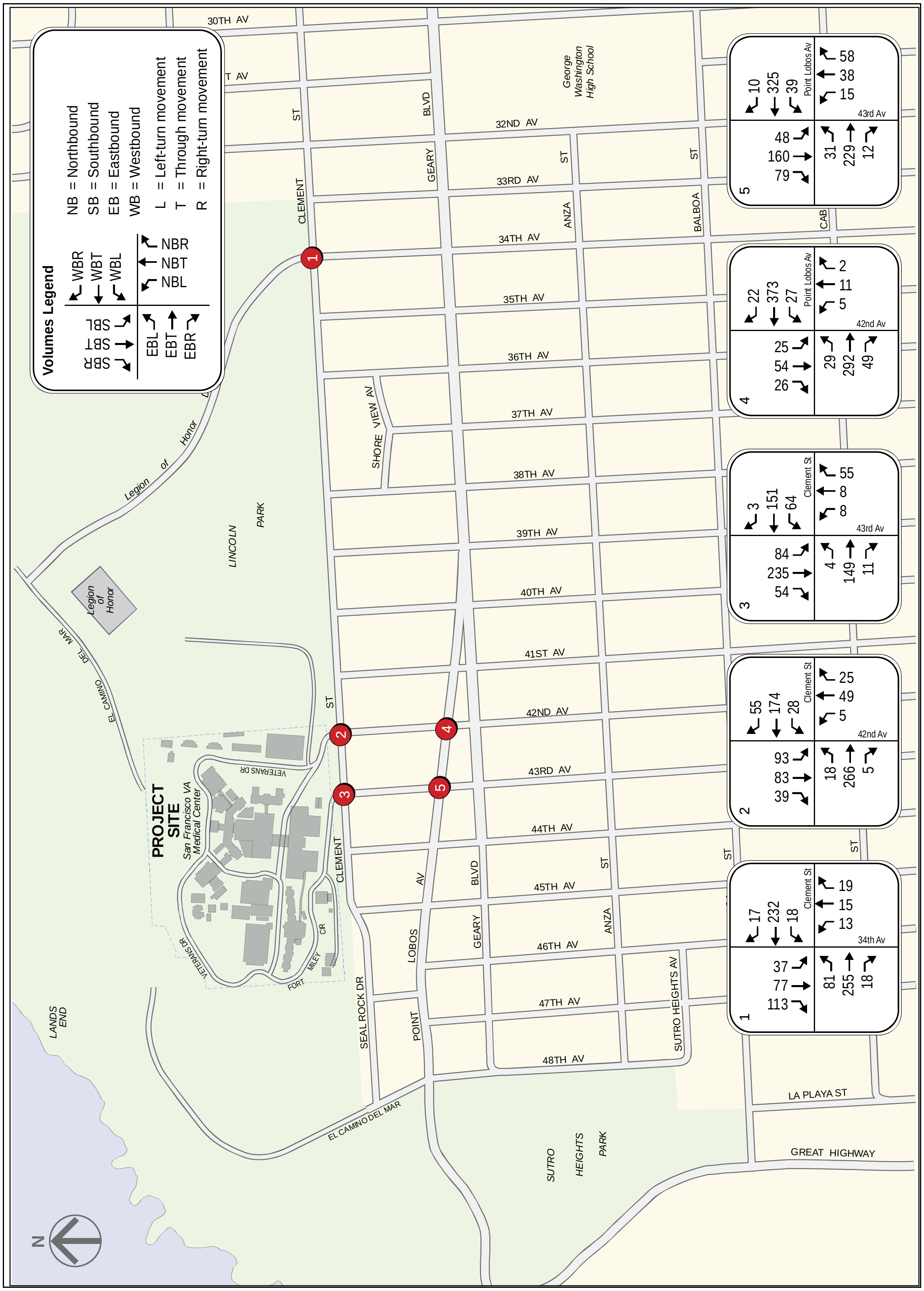

Figure 15: Intersection Traffic Volumes—2027 Long-term Alternative 4 Conditions

Roadway Segments

The expected LOS at the two study roadway segments under 2027 Long-term Alternative 4 Conditions is summarized in Table 31. As shown in Table 31, both roadway segments would operate at acceptable conditions (LOS C or better) during the weekday p.m. peak hour under 2027 Long-term Alternative 4 Conditions.

Table 31: Roadway Segment Levels of Service—2027 Long-term Alternative 4 Conditions (Weekday P.M. Peak Hour)

Roadway Segment		Direction	Existing Conditions		2020 Short-term Alternative 4 Conditions		2027 Long-term Alternative 4 Conditions	
			LOS	v/c Ratio	LOS	v/c Ratio	LOS	v/c Ratio
1	42nd Avenue	Northbound	A	0.16	A	0.17	A	0.18
	Between Clement Street and Point Lobos Avenue	Southbound	A	0.24	A	0.25	A	0.26
2	43rd Avenue	Northbound	A	0.16	A	0.17	A	0.18
	Between Clement Street and Point Lobos Avenue	Southbound	C	0.64	C	0.66	C	0.69

Notes: LOS = level of service; v/c = volume-to-capacity
Source: Data compiled by AECOM in 2014

4.2.2 Transit Conditions

Public Transit

Table 32 summarizes ridership, capacity, and capacity utilization of transit services in the Geary Corridor under 2027 Long-term Alternative 4 Conditions. As shown in Table 32, ridership would increase from Existing Conditions, but overall capacity improvements in the corridor as a result of BRT and the TEP would keep overall capacity utilization similar to Existing Conditions.

Table 32: Muni Ridership and Capacity—2027 Long-term Alternative 4 Conditions (Weekday P.M. Peak Hour)

Direction	Existing Conditions			2020 Short-term Alternative 4 Conditions			2027 Long-term Alternative 4 Conditions		
	Ridership	Capacity	Utilization	Ridership	Capacity	Utilization	Ridership	Capacity	Utilization
Inbound	908	1,777	51%	1,142	2,820	41%	1,324	2,820	47%
Outbound	1,814	2,528	72%	2,359	3,826	62%	2,783	3,826	73%

Source: SFMTA, 2011.

Notes:
Ridership data based on conditions at the MLP for each line.

4.3 2027 Long-term Alternative 1 Conditions

The following section summarizes the analysis results for 2027 Long-term Alternative 1 Conditions. For quantitative analyses, results are compared against the results for 2027 Long-term Alternative 4 Conditions to determine any potential impacts of the Project. For other analyses, conditions with the Project and any potential impacts are discussed qualitatively.

As indicated in Table 1, implementation of the LRDP is expected to be completed in March 2026. Alternative 1 assumes that all of the LRDP's long-term (Phase 2) components occur at the Fort Miley Campus, and Alternative 3—evaluated in Section 4.4—assumes that some of the components instead take place at a potential new Mission Bay Campus, as described in Section 1.3.1. Consequently, Alternative 1 represents the worst-case scenario conditions at the Fort Miley Campus, given that land uses are more heavily concentrated at the Campus under this alternative.

4.3.1 Operational Traffic Impacts

Intersections

The Project's estimated vehicle-trips under Phase 1 and Phase 2 of Alternative 1, as summarized in Table 20, were added to traffic volumes for 2027 Long-term Alternative 4 Conditions to derive traffic volumes for 2027 Long-term Alternative 1 Conditions, illustrated in Figure 16. The resulting LOS at the study intersections under 2027 Long-term Alternative 1 Conditions is summarized in Table 33.

Table 33: Intersection Levels of Service—2027 Long-term Alternative 1 Conditions (Weekday P.M. Peak Hour)

Intersection		Control Type	2027 Long-term Alternative 4 Conditions		2027 Long-term Alternative 1 Conditions	
			LOS	Delay (seconds/ vehicle)	LOS	Delay (seconds/ vehicle)
1	34th Avenue/Clement Street	All-Way Stop	B	12.9	C	15.0
2	42nd Avenue/Clement Street	All-Way Stop	B	11.8	C	15.1
3	43rd Avenue/Clement Street	All-Way Stop	B	12.8	C	17.3
4	42nd Avenue/Point Lobos Avenue	All-Way Stop	B	13.7	C	16.0
5	43rd Avenue/Point Lobos Avenue	All-Way Stop	C	16.2	C	19.0

Note: LOS = level of service
Source: Data compiled by AECOM in 2014

As shown in Table 33, all five study intersections would operate at acceptable conditions (LOS C or better) during the weekday p.m. peak hour under 2027 Long-term Alternative 1 Conditions. As such, the Project would not result in significant operational impacts on any study intersections.

Roadway Segments

Roadway segment LOS for 2027 Long-term Alternative 1 Conditions is summarized in Table 34.

Table 34: Roadway Segment Levels of Service—2027 Long-term Alternative 1 Conditions (Weekday P.M. Peak Hour)

Roadway Segment		Direction	2027 Long-term Alternative 4 Conditions		2027 Long-term Alternative 1 Conditions	
			LOS	v/c Ratio	LOS	v/c Ratio
1	42nd Avenue	Northbound	A	0.18	A	0.26
	Between Clement Street and Point Lobos Avenue	Southbound	A	0.26	B	0.34
2	43rd Avenue	Northbound	A	0.18	A	0.23
	Between Clement Street and Point Lobos Avenue	Southbound	C	0.69	D	0.80

Notes: LOS = level of service; v/c = volume-to-capacity
Source: Data compiled by AECOM in 2014

Although southbound 43rd Avenue between Clement Street and Point Lobos Avenue would degrade to LOS D, both roadway segments would operate at acceptable conditions (LOS D or better) during the weekday p.m. peak hour under 2027 Long-term Alternative 1 Conditions, as shown in Table 34. As such, the Project would not result in significant operational impacts on any roadway segments.

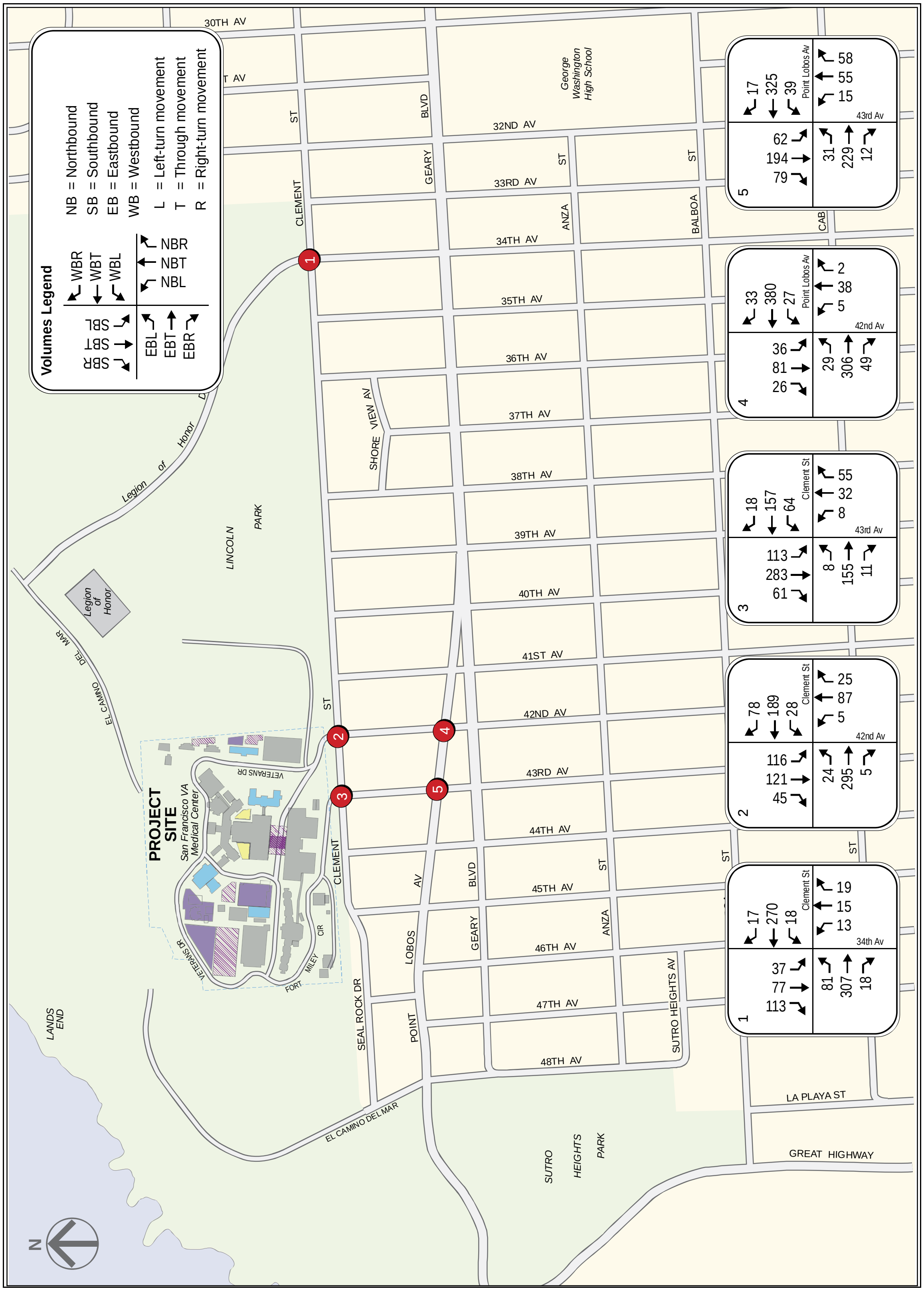

Figure 16: Intersection Traffic Volumes—2027 Long-term Alternative 1 Conditions

Passenger Vehicle Access

As discussed in Section 3.3.1, the changes to passenger vehicle access would simplify circulation through the Campus and help to segregate employee and Veteran/visitor vehicular traffic. These changes would result in, at most, only minor changes to travel times (either increase or decrease) and access routes, and would not constitute a significant operational impact on passenger vehicle access at the Campus.

East Fort Miley Access

As discussed in Section 3.3.1, the LRDP does not propose specific changes to GGNRA access to and from East Fort Miley, and the existing access road at the southwest corner of Building 212 would continue to serve traffic generated at this facility. The changes to the internal roadway network proposed by the LRDP would result in, at most, only minor changes in the total traffic volumes passing through the Veterans Drive/Fort Miley Circle intersection (either increase or decrease) and would not preclude GGNRA access into and out of East Fort Miley. Overall, the Project is not expected to result in significant operational impacts on GGNRA access into and out of East Fort Miley.

4.3.2 Operational Transit Impacts

Public Transit

Ridership and Capacity Effects
As shown in Table 20, Alternative 1 would generate 215 net-new transit trips (91 inbound to the Project site and 124 outbound from the Project site) during the weekday p.m. peak hour when combining ridership generated by both short-term and long-term actions. As discussed in Section 3.3.2, the Campus's location at the outer end of the Geary Corridor means that the commute direction for the Project constitutes the "reverse commute" direction. Trips heading inbound to the Project site would take outbound transit services in the Geary Corridor, and trips heading outbound from the Project site would take inbound transit services in the Geary Corridor.

In particular, outbound transit service in the Geary Corridor is expected to operate at 73 percent capacity utilization under 2027 Long-term Alternative 4 Conditions, as shown in Table 32. The addition of up to 91 passengers as a result of the Project would increase capacity utilization to 75 percent, which would still remain below the 85 percent threshold. In the opposite direction, inbound transit service in the Geary Corridor is expected to operate at only 47 percent capacity utilization during the weekday p.m. peak hour. Even with the addition of up to 124 new transit riders generated by the Project, capacity utilization would still only increase to 51 percent, well below the 85 percent threshold.

Similar to 2020 Short-term Alternative 1 Conditions as discussed in Section 3.3.2, it is likely that only some of these 124 new transit riders leaving the Project site would choose to take Muni buses in the Geary Corridor. Many of these riders would be expected to use the commuter shuttle services provided by SFVAMC, such that the actual increase in capacity utilization on inbound buses in the Geary Corridor is expected to be less than as described above.

Overall, the Project is not expected to result in a significant operational impact on Muni capacity in either direction in the Geary Corridor.

Other Effects
As discussed in Section 3.3.2, the changes to circulation on the Campus for Muni buses would represent only minor changes and would not constitute a significant operational impact on Muni service. Although Phase 1 and Phase 2 of the Project would generate a combined net increase of 259 vehicle-trips as shown in Table 20, only some of these vehicles would interact with Muni buses (many would actually be employee vehicles using the employee access at 42nd Avenue/Clement Street and would likely not interact with Muni buses at all). Overall, the expected increase in average delays at 42nd Avenue/Clement Street would be minimal, as shown in Table 33.

SFVAMC Shuttle Services

As discussed in Section 3.3.2, the changes to shuttle access and circulation at the Campus would result in, at most, only minor changes to travel times (either increase or decrease), and would not constitute a significant operational impact on shuttle services at the Campus.

Taxi Services

As discussed in Section 3.3.2, the changes to taxi access and circulation at the Campus would result in, at most, only minor changes to travel times (either increase or decrease), and would not constitute a significant operational impact on shuttle services at the Campus.

4.3.3 Operational Bicycle Impacts

A portion of the 42 net-new Project trips during the weekday p.m. peak hour shown as “other” in Table 20 (combining ridership generated by both short-term and long-term actions) would be completed by bicycle. Similar to 2020 Short-term Alternative 1 Conditions as discussed in Section 3.3.3, the expected increase in bicycle trips would not be substantial enough to affect overall bicycle circulation in the Campus or surrounding area or the operations of adjacent bicycle facilities. Some portion of the Project’s expected net increase of 259 vehicle-trips as shown in Table 20 would travel on or cross roadways with designated bikeways. However, this would likely not substantially increase the potential for conflicts between bicyclists and motorists, especially when the traffic is distributed across two access points on the Campus (42nd Avenue/Clement Street and 43rd Avenue/Clement Street) and across two different directions (entering and exiting the Campus).

As discussed in Section 3.3.3, the LRDP does not propose specific changes with regard to bicycle access on the Campus, and bicyclists would continue to be able to access the Campus as they currently do via 42nd Avenue and 43rd Avenue. The changes to the internal roadway network proposed by the LRDP would result in, at most, only minor changes to travel times (either increase or decrease), and would not conflict with existing or planned bicycle facilities outside of the Campus or constitute a hazard to bicycle users. Overall, the Project is not expected to result in significant operational impacts on bicycle conditions.

4.3.4 Operational Pedestrian Impacts

The net increase in pedestrian traffic generated by the Project (Phase 1 and Phase 2) during the weekday p.m. peak hour on the streets surrounding the Campus would comprise 114 walk trips and some portion of the 215 transit trips and 435 auto trips (for transit passengers or motorists accessing transit stops or parked vehicles at off-site locations) shown in Table 20. Similar to 2020 Short-term Alternative 1 Conditions as discussed in Section 3.3.4, the new pedestrian trips generated by the Project could be accommodated without any impacts on pedestrian safety or operations. The Project’s expected net increase of 259 vehicle-trips as shown in Table 20 would also likely not substantially increase the potential for conflicts between pedestrians and vehicles, especially when the traffic is distributed across two access points on the Campus (42nd Avenue/Clement Street and 43rd Avenue/Clement Street), both of which feature all-way stop control.

As discussed in Section 3.3.3, the Project would not conflict with existing pedestrian facilities or propose design features hazardous to pedestrians. External access to and from the Campus for pedestrians would remain unchanged, but proposed changes within the Campus would generally improve pedestrian conditions. Overall, the Project is not expected to result in significant operational impacts on pedestrian conditions.

4.3.5 Operational Vehicle Parking Impacts

As discussed in Section 3.3.5, parking conditions are not static; parking supply and demand varies from day to day, from day to night, from month to month, etc. Hence, the availability of parking spaces (or lack thereof) is not a permanent physical condition, but changes over time as people change their modes and patterns of travel. Although parking conditions change over time, a substantial deficit in parking caused by a project that creates hazardous conditions or significant delays to traffic, transit, bicycles, or pedestrians could adversely affect the physical environment. Whether a deficit in parking creates such conditions depends on the magnitude of the shortfall and the ability of drivers to change travel patterns or switch to other travel modes. If a substantial deficit in parking caused by a project creates hazardous conditions or significant delays in travel, such a condition could also result in secondary physical environmental impacts (e.g., air quality or noise impacts caused by congestion), depending on the project and its setting.

The absence of a ready supply of parking spaces, combined with available alternatives to auto travel (e.g., transit service, taxis, bicycles, or travel by foot) and a relatively dense pattern of urban development, induces many drivers to seek and find alternative parking facilities, shift to other modes of travel, or change their overall travel habits. Any such resulting shifts to transit service or other modes (walking and biking) would be in keeping with the City's "Transit First" policy and numerous San Francisco General Plan policies, including those enumerated in the Transportation Element. The City's Transit First Policy, established in Article 8A, Section 8A.115 of the City's Charter, provides that "parking policies for areas well served by public transit shall be designed to encourage travel by public transportation and alternative transportation."

This transportation analysis accounts for potential secondary effects, such as cars circling and looking for a parking space in areas of limited parking supply, by assuming that all drivers would attempt to find parking at or near the Project site and then seek parking farther away if convenient parking is unavailable. The secondary effects of drivers searching for parking are typically offset by a reduction in vehicle-trips attributable to others who are aware of constrained parking conditions in a given area, and thus choose to reach their destination by other modes (i.e., walking, biking, transit, or taxi). If this occurs, any secondary environmental impacts that may result from a shortfall in parking in the vicinity of the Project site would be minor. The traffic assignments used in the transportation analysis, as well as in the associated air quality and noise analyses, would reasonably address potential secondary effects.

Parking Demand and Supply

As shown in Table 22, the Project (Phase 1 and Phase 2) would generate a demand for 426 new parking spaces under 2027 Long-term Alternative 1 Conditions, based on ITE parking demand rates. Overall, the Project would provide 306 net new off-street spaces at the Campus, which would result in an unmet parking demand of 120 spaces.

Although the estimated demand would exceed the supply proposed by the Project, it should be noted that the Campus is located within an urban environment where alternative modes attract a reasonably substantial share of the total travel demand. As described above, the presence of viable alternative modes of travel such as transit, biking, and walking would likely induce some Campus users to shift to other modes of travel, in keeping with San Francisco's "Transit First" policy.

As indicated in Table 3 and discussed in Section 1.3.3, there would be a slight reduction in the total capacity of visitor and patient parking on the Campus. The overall magnitude of this reduction, however, is relatively small, and would be offset by improved pick-up and drop-off access that would result from completion of the proposed new traffic circle adjacent to the proposed Patient Welcome Center. Overall parking capacity on the Campus would still increase. SFVAMC would have the ability to purpose additional Campus parking currently identified for employee use in Table 3 for patient and visitor use, either temporarily or permanently, should the parking demand for Campus patients and visitors exceed the supply of designated spaces.

Planning Code Guidance

Although not explicitly required because the Project is a federal action, guidance from the Planning Code regarding requirements for the provision of off-street (i.e., on-Campus) parking were also consulted. The Project's required supply of off-street parking according to the San Francisco Planning Code was calculated using the methodology described in Section 3.3.5. The results are summarized in Table 35.

As shown in Table 35, the Project (Phase 1 and Phase 2) would be required to provide 773 new parking spaces (206 spaces in the short-term time frame and 567 spaces in the long-term time frame). Because the Project would provide 306 net new spaces on the Campus, the Project's proposed parking supply would not meet Planning Code requirements.

As discussed previously, however, a deficit in the Project's parking supply relative to the estimated demand and/or Planning Code requirements, in and of itself, would not constitute a significant impact related to vehicle parking conditions. The Project proposes to provide on-site parking at higher provision ratios than currently exist on the Campus for existing uses on at the site, and the Campus is well-served by transit and other viable alternative modes of travel, including a variety of shuttle services for patients, visitors, and SFVAMC staff and employees.

In addition, the proposed supply of parking would not create hazardous conditions or significant delays affecting traffic, transit, bicycles, or pedestrians, and would not render use of transit or other alternative modes infeasible.

Table 35: Planning Code Requirements for Off-Street Parking Supply—Alternative 1 (Phase 2)

Subphase	Action	Planning Code Land Use[1]	Net-New Gross Area in square feet	Required Supply in spaces
Short-term (Phase 1)				
See Table 29 for detailed calculations of Phase 1 required parking supply				
Subtotal				206
Long-term (Phase 2)				
2.1 Building 213: Clinical Addition Building	Construction	Medical office/clinic	170,000	567
Subtotal				567
Total				773

Source: Data compiled by AECOM in 2014

Notes:

(1) "Medical office/clinic" = Medical or dental office or outpatient clinic

Given these considerations, the Project is not expected to result in significant operational impacts related to parking. Should the secondary effects of the parking deficit cause concern, however, expansion of the existing valet parking program to include the additional parking structures proposed by the Project could provide as much as 150 additional spaces.

4.3.6 Operational Freight Loading Impacts

As discussed in Section 3.3.6, the LRDP does not propose specific changes to Campus access for freight loading and service/delivery vehicles, and the existing access via 42nd Avenue and 43rd Avenue would remain unchanged. The changes to the internal roadway network would result in, at most, only minor changes to travel times (either increase or decrease) and access routes for trucks serving the Campus, and would not constitute a significant operational impact on freight loading conditions.

Similarly, specific details regarding the future provision of freight loading spaces will only be determined as each specific LRDP component enters the design and implementation phase. As mentioned previously, some of the proposed facilities may require specific freight loading needs or design features that cannot be fully evaluated until a more detailed design is available. As such, it is assumed that impacts related to the demand and supply of freight loading spaces or the accessibility and usability of freight loading facilities (and any associated off-Campus effects) will be evaluated at a later time as part of project-level environmental reviews for specific LRDP subphases.

4.3.7 Operational Emergency Vehicle Access Impacts

As discussed in Section 3.3.7, fire department access on the Campus would remain unchanged under the LRDP, but emergency medical access would be rerouted via the 43rd Avenue entrance. These changes, together with changes to the internal roadway network, would result in, at most, only minor changes to travel times (either increase or decrease) and access routes for emergency vehicles, and would not constitute a significant operational impact on emergency vehicle access.

4.3.8 Construction Impacts

Under Phase 2 of Alternative 1, vendor and haul truck traffic would peak at 36 vehicles (72 trips) per day in April 2024, and construction worker trips would peak at 44 vehicles (88 trips) per day in January 2026. Construction activities under Phase 2 of Alternative 1 would generate their maximum traffic volumes in April 2024, with as many as 77 vehicles (154 trips) in one day. Under Phase 2 of Alternative 2, vendor and haul truck traffic would peak at 36 vehicles (72 trips) per day in May 2024, and construction worker trips would peak at 45 vehicles (90 trips) per day in May 2024. As a result, construction activities under Phase 2 of Alternative 2 would generate their maximum traffic volumes in May 2024, with as many as 81 vehicles (162 trips) in one day. Under both alternatives, construction traffic in other months would generally be much lower than the peak month, with most months generating a maximum traffic volume that would not exceed 50 vehicles (100 trips) in one day.

Overall, construction of Phase 2 would generate a lower peak-month traffic volume than construction of Phase 1. As a result, construction-related impacts under Phase 2 are expected to be similar to or slightly less severe than construction-related impacts under Phase 1. Mitigation measures for any potentially significant impacts under Phase 2 would be as described for Phase 1 in Section 3.3.8.

4.4 2027 Long-term Alternative 3 Conditions

The following section summarizes the analysis results for 2027 Long-term Alternative 3 Conditions. For quantitative analyses, results are compared against the results for 2027 Long-term Alternative 4 Conditions to determine any potential impacts of the Project. For other analyses, conditions with the Project and any potential impacts are discussed qualitatively.

As indicated in Table 1, implementation of the LRDP is expected to be completed in March 2026. In contrast to Alternative 1, which assumes that all of the LRDP's long-term (Phase 2) components occur at the Fort Miley Campus, Alternative 3 assumes that some of these components instead take place at a potential new Mission Bay Campus. Specifically, the potential new Mission Bay Campus would feature a 140,000-square-foot ambulatory care center and associated parking structure as summarized in Table 2.

Because a specific location and detailed facilities plan for an extension campus in Mission Bay have yet to be determined, a detailed quantitative analysis of transportation impacts at the Mission Bay Campus has not been conducted. The quantitative analysis of Alternative 3 in this section instead focuses on the Fort Miley Campus and the associated LRDP short-term (Phase 1) actions completed there under Alternative 3. Further analysis to assess transportation impacts at the Mission Bay Campus would be required as part of a subsequent environmental review once a specific location and detailed facilities plan have been identified.

4.4.1 Operational Traffic Impacts

As stated above, the quantitative analysis of operational traffic impacts under 2027 Long-term Alternative 3 Conditions focuses on the Fort Miley Campus and the LRDP short-term actions completed there under Alternative 3.

Intersections

The estimated vehicle-trips under Phase 1 of Alternative 3, as summarized in Table 21, were added to traffic volumes for 2027 Long-term Alternative 4 Conditions to derive traffic volumes for 2027 Long-term Alternative 3 Conditions, illustrated in Figure 17. The resulting LOS at the study intersections under 2027 Long-term Alternative 3 Conditions is summarized in Table 36.

As shown in Table 36, all five study intersections would operate at acceptable conditions (LOS C or better) during the weekday p.m. peak hour under 2027 Long-term Alternative 3 Conditions. As such, the Project would not result in significant operational impacts on any study intersections.

Roadway Segments

Roadway segment LOS for 2027 Long-term Alternative 3 Conditions is summarized in Table 37.

Although southbound 43rd Avenue between Clement Street and Point Lobos Avenue would degrade to LOS D, both roadway segments would operate at acceptable conditions (LOS D or better) during the weekday p.m. peak hour under 2027 Long-term Alternative 3 Conditions, as shown in Table 37. As such, the Project would not result in significant operational impacts on any roadway segments.

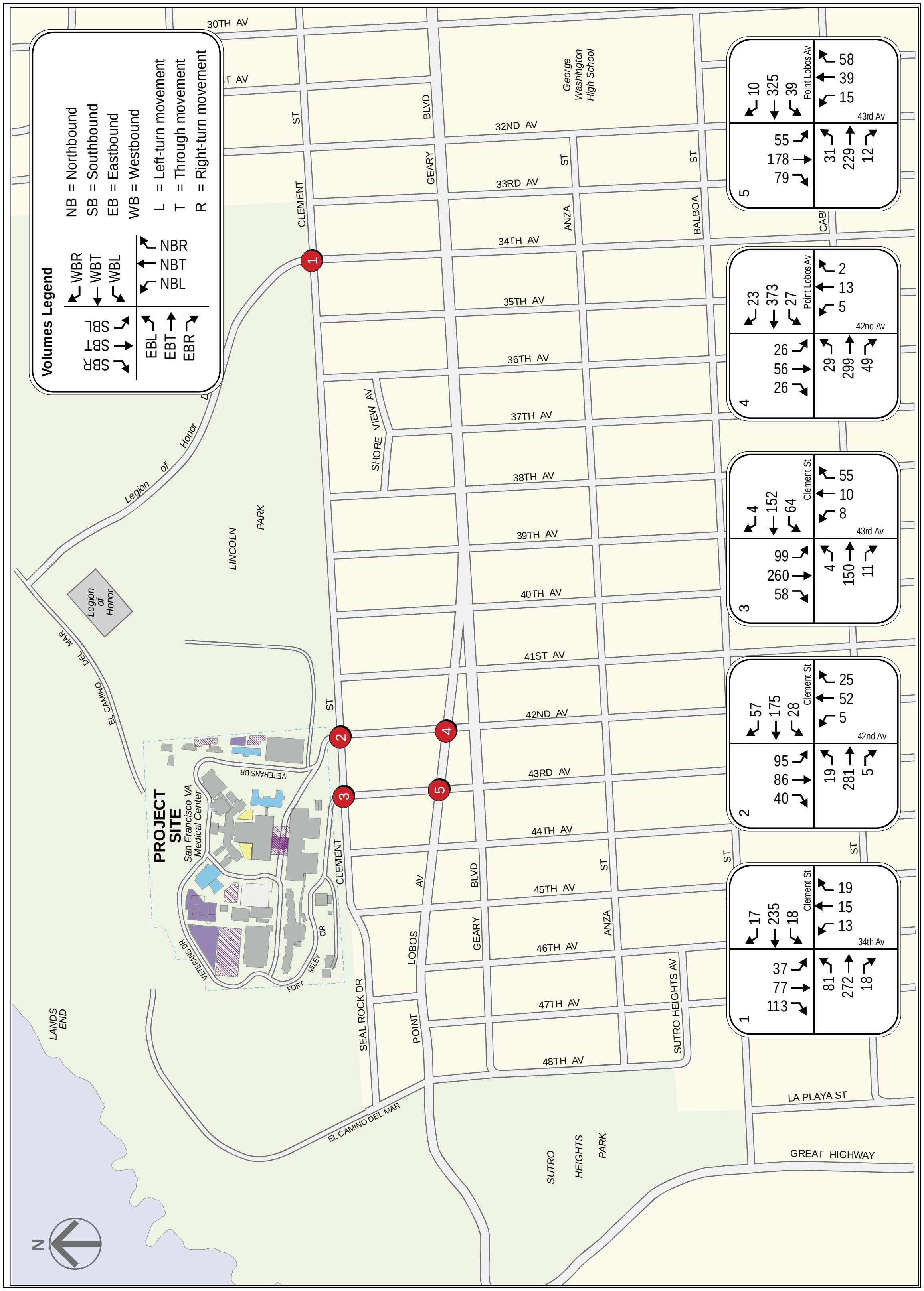

Figure 17: Intersection Traffic Volumes—2027 Long-term Alternative 3 Conditions

Table 36: Intersection Levels of Service—2027 Long-term Alternative 3 Conditions (Weekday P.M. Peak Hour)

Intersection	Control Type	2027 Long-term Alternative 4 Conditions		2027 Long-term Alternative 3 Conditions	
		LOS	Delay (seconds/ vehicle)	LOS	Delay (seconds/ vehicle)
1 34th Avenue/Clement Street	All-Way Stop	B	12.9	B	13.3
2 42nd Avenue/Clement Street	All-Way Stop	B	11.8	B	12.2
3 43rd Avenue/Clement Street	All-Way Stop	B	12.8	B	14.3
4 42nd Avenue/Point Lobos Avenue	All-Way Stop	B	13.7	B	14.0
5 43rd Avenue/Point Lobos Avenue	All-Way Stop	C	16.2	C	17.1

Note: LOS = level of service
Source: Data compiled by AECOM in 2014

Table 37: Roadway Segment Levels of Service—2027 Long-term Alternative 3 Conditions (Weekday P.M. Peak Hour)

Roadway Segment	Direction	2027 Long-term Alternative 4 Conditions		2027 Long-term Alternative 3 Conditions	
		LOS	v/c Ratio	LOS	v/c Ratio
1 42nd Avenue	Northbound	A	0.18	A	0.18
Between Clement Street and Point Lobos Avenue	Southbound	A	0.26	A	0.27
2 43rd Avenue	Northbound	A	0.18	A	0.18
Between Clement Street and Point Lobos Avenue	Southbound	C	0.69	D	0.74

Notes: LOS = level of service; v/c = volume-to-capacity
Source: Data compiled by AECOM in 2014

Passenger Vehicle Access

As discussed in Section 3.3.1, the changes to passenger vehicle access would simplify circulation through the Campus and help to segregate employee and Veteran/visitor vehicular traffic. These changes would result in, at most, only minor changes to travel times (either increase or decrease) and access routes, and would not constitute a significant operational impact on passenger vehicle access at the Campus.

East Fort Miley Access

As discussed in Section 3.3.1, the LRDP does not propose specific changes to GGNRA access to and from East Fort Miley, and the existing access road at the southwest corner of Building 212 would continue to serve traffic generated at this facility. The changes to the internal roadway network proposed by the LRDP would result in, at most, only minor changes in the total traffic volumes passing through the Veterans Drive/Fort Miley Circle intersection (either increase or decrease) and would not preclude GGNRA access into and out of East Fort Miley. Overall, the Project is not expected to result in significant operational impacts on GGNRA access into and out of East Fort Miley.

Mission Bay Campus

As shown in Table 21, the potential new Mission Bay Campus would generate approximately 184 vehicle-trips (92 inbound to the site and 92 outbound from the site) during the weekday p.m. peak hour. As a specific location and detailed facilities plan for the potential new Mission Bay Campus have not yet been determined, further analysis to assess traffic impacts at the Mission Bay Campus would be required as part of a subsequent environmental review, once these details have been determined.

4.4.2 Operational Transit Impacts

Public Transit

As stated above, the quantitative analysis of transit impacts under 2027 Long-term Alternative 3 Conditions focuses on the Fort Miley Campus and the LRDP short-term actions completed there under Alternative 3.

Ridership and Capacity Effects
As shown in Table 21, Alternative 3 would generate 45 net-new transit trips (six inbound to the Campus and 39 outbound from the Campus) during the weekday p.m. peak hour, far fewer than Alternative 1. As discussed in Section 3.3.2, the Campus's location at the outer end of the Geary Corridor means that the commute direction for the Project constitutes the "reverse commute" direction—trips heading inbound to the Project site would take outbound transit services in the Geary Corridor, and trips heading outbound from the Project site would take inbound transit services in the Geary Corridor.

In particular, outbound transit service in Geary Corridor is expected to operate at only 73 percent capacity utilization under 2027 Long-term Alternative 4 Conditions, as shown in Table 32. The addition of up to six passengers as a result of the Project would only represent a 0.2 percent increase in capacity utilization. This would not constitute a material change in the capacity utilization, which would continue to remain below the 85 percent threshold at 73 percent under 2027 Long-term Alternative 3 Conditions. In the opposite direction, inbound transit service in the Geary Corridor is expected to operate at only 47 percent capacity utilization during the weekday p.m. peak hour. Even with the addition of up to 39 new transit riders generated by the Project, capacity utilization would still only increase continue to 48 percent, well below the 85 percent threshold.

Overall, the Project is not expected to result in a significant operational impact on Muni capacity in either direction in the Geary Corridor.

Other Effects
As discussed in Section 3.3.2, the changes to circulation on the Campus for Muni buses would represent only minor changes and would not constitute a significant operational impact on Muni service. In particular, the Project's expected net increase of 57 vehicle-trips as shown in Table 21 would likely not substantially affect Muni operations, and the expected increase in average delays at 42nd Avenue/Clement Street would be negligible, as shown in Table 36.

SFVAMC Shuttle Services

As discussed in Section 3.3.2, the changes to shuttle access and circulation at the Campus would result in, at most, only minor changes to travel times (either increase or decrease), and would not constitute a significant operational impact on shuttle services at the Campus.

Taxi Services

As discussed in Section 3.3.2, the changes to taxi access and circulation at the Campus would result in, at most, only minor changes to travel times (either increase or decrease), and would not constitute a significant operational impact on shuttle services at the Campus.

Mission Bay Campus

As shown in Table 21, the potential new Mission Bay Campus would generate approximately 104 transit trips (52 inbound to the site and 52 outbound from the site) during the weekday p.m. peak hour. Because a specific location and detailed facilities plan for the potential new Mission Bay Campus have not yet been determined, further analysis to assess transit impacts at the Mission Bay Campus would be required as part of a subsequent environmental review, once these details have been determined.

4.4.3 Operational Bicycle Impacts

A portion of the six net-new Project trips shown as "other" in Table 21 would be completed by bicycle. Similar to 2020 Short-term Alternative 1 Conditions as discussed in Section 3.3.3, the expected increase in bicycle trips would not be substantial enough to affect overall bicycle circulation in the Campus or surrounding area or the operations of adjacent bicycle facilities. The Project's expected net increase of 57 vehicle-trips as shown in Table 21 would also likely not substantially increase the potential for conflicts between bicyclists and motorists.

As discussed in Section 3.3.3, the LRDP does not propose specific changes with regard to bicycle access on the Campus, and bicyclists would continue to be able to access the Campus as they currently do via 42nd Avenue and 43rd Avenue. The changes to the internal roadway network proposed by the LRDP would result in, at most, only minor changes to travel times (either increase or decrease), and would not conflict with existing or planned bicycle facilities outside of the Campus or constitute a hazard to bicycle users. Overall, the Project is not expected to result in significant operational impacts on bicycle conditions.

Mission Bay Campus

A portion of the 37 Project trips during the weekday p.m. peak hour shown as "other" in Table 21 for Phase 2 would be completed by bicycle. Because a specific location and detailed facilities plan for the potential new Mission Bay Campus have not yet been determined, further analysis to assess bicycle impacts at the Mission Bay Campus would be required as part of a subsequent environmental review, once these details have been determined.

4.4.4 Operational Pedestrian Impacts

The Project-generated net increase in pedestrian traffic during the weekday p.m. peak hour on the streets surrounding the Campus would comprise 20 walk trips and some portion of the 45 transit trips and 81 auto trips (for transit passengers or motorists accessing transit stops or parked vehicles at off-site locations) shown in Table 21. Similar to 2020 Short-term Alternative 1 Conditions as discussed in Section 3.3.4, the new pedestrian trips generated by the Project could be accommodated without any impacts on pedestrian safety or operations. Some portion of the Project's expected net increase of 57 vehicle-trips as shown in Table 21 would travel on or cross roadways with designated bikeways, but would likely not substantially increase the potential for conflicts between bicyclists and motorists.

As discussed in Section 3.3.4, the Project would not conflict with existing pedestrian facilities or propose design features hazardous to pedestrians. External access to and from the Campus for pedestrians would remain unchanged, but proposed changes within the Campus would generally improve pedestrian conditions. Overall, the Project is not expected to result in significant operational impacts on pedestrian conditions.

Mission Bay Campus

Pedestrian trips generated at the potential new Mission Bay Campus during the weekday p.m. peak hour would include approximately 72 walk trips, plus some portion of the 104 transit trips shown in Table 21, depending on the proposed shuttle services and on-site parking supply provided at the Mission Bay Campus. As a specific location and detailed facilities plan for the potential new Mission Bay Campus have not yet been determined, further analysis to assess pedestrian impacts at the Mission Bay Campus would be required as part of a subsequent environmental review, once these details have been determined.

4.4.5 Operational Vehicle Parking Impacts

As discussed in Section 3.3.5, parking conditions are not static; parking supply and demand varies from day to day, from day to night, from month to month, etc. Hence, the availability of parking spaces (or lack thereof) is not a permanent physical condition, but changes over time as people change their modes and patterns of travel. Although parking conditions change over time, a substantial deficit in parking caused by a project that creates hazardous conditions or significant delays to traffic, transit, bicycles, or pedestrians could adversely affect the physical environment. Whether a deficit in parking creates such conditions depends on the magnitude of the shortfall and the ability of drivers to change travel patterns or switch to other travel modes. If a substantial deficit in parking caused by a project creates hazardous conditions or significant delays in travel, such a condition could also result in secondary physical environmental impacts (e.g., air quality or noise impacts caused by congestion), depending on the project and its setting.

The absence of a ready supply of parking spaces, combined with available alternatives to auto travel (e.g., transit service, taxis, bicycles, or travel by foot) and a relatively dense pattern of urban development, induces many drivers to seek and find alternative parking facilities, shift to other modes of travel, or change their overall travel habits. Any such resulting shifts to transit service or other modes (walking and biking), would be in keeping with the City's "Transit First" policy and numerous San Francisco General Plan policies, including those enumerated in the Transportation Element. The City's Transit First Policy, established in Article 8A, Section 8A.115 of the City's Charter, provides that "parking policies for areas well served by public transit shall be designed to encourage travel by public transportation and alternative transportation."

This transportation analysis accounts for potential secondary effects, such as cars circling and looking for a parking space in areas of limited parking supply, by assuming that all drivers would attempt to find parking at or near the Project site and then seek parking farther away if convenient parking is unavailable. The secondary effects of drivers searching for parking is typically offset by a reduction in vehicle-trips attributable to others who are aware of constrained parking conditions in a given area, and thus choose to reach their destination by other modes (i.e., walking, biking, transit, or taxi). If this occurs, any secondary environmental impacts that may result from a shortfall in parking in the vicinity of the Project site would be minor. The traffic assignments used in the transportation analysis, as well as in the associated air quality and noise analyses, would reasonably address potential secondary effects.

Parking Demand and Supply

As indicated in Table 23, the new uses proposed by the Project would generate a demand for 132 parking spaces at the Campus, similar to 2020 Short-term Alternative 1 Conditions as described in Section 3.3.5. As described in Section 1.3.3, the Project would provide 306 net additional spaces at the Campus, exceeding the estimated new demand by 174 spaces.

Although some of these spaces would "recapture" unmet demand on the Campus that currently spills into the surrounding neighborhood, the proposed supply of 306 spaces would exceed the parking provision ratio for the Campus under Existing Conditions, as described in Section 3.3.5.

Given these considerations, the Project is not expected to result in significant operational impacts related to parking.

Mission Bay Campus

As indicated in Table 23, the new uses proposed by the Project would generate a demand for 271 parking spaces at the potential new Mission Bay Campus. As a specific location and detailed facilities plan for the potential new Mission Bay Campus have not yet been determined, further analysis to assess vehicle parking impacts at the Mission Bay Campus would be required as part of a subsequent environmental review, once these details have been determined.

4.4.6 Operational Freight Loading Impacts

As discussed in Section 3.3.6, the LRDP does not propose specific changes to Campus access for freight loading and service/delivery vehicles, and the existing access via 42nd Avenue and 43rd Avenue would remain unchanged. The changes to the internal roadway network would result in, at most, only minor changes to travel times (either increase or decrease) and access routes for trucks serving the Campus, and would not constitute a significant operational impact on freight loading conditions.

Similarly, specific details regarding the future provision of freight loading spaces will only be determined as each specific LRDP component enters the design and implementation phase. As mentioned previously, some of the proposed facilities may require specific freight loading needs or design features that cannot be fully evaluated until a more detailed design is available. As such, it is assumed that impacts related to the demand and supply of freight loading spaces or the accessibility and usability of freight loading facilities (and any associated off-Campus effects) will be evaluated at a later time as part of project-level environmental reviews for specific LRDP subphases.

Mission Bay Campus

Because a specific location and detailed facilities plan for the potential new Mission Bay Campus have not yet been determined, any analysis to assess freight loading impacts at the Mission Bay Campus would be required as part of a subsequent environmental review, once these details have been determined.

4.4.7 Operational Emergency Vehicle Access Impacts

As discussed in Section 3.3.7, fire department access on the Campus would remain unchanged under the LRDP, but emergency medical access would be rerouted via the 43rd Avenue entrance. These changes, together with changes to the internal roadway network, would result in, at most, only minor changes to travel times (either increase or decrease) and access routes for emergency vehicles, and would not constitute a significant operational impact on emergency vehicle access.

Mission Bay Campus

Because a specific location and detailed facilities plan for the potential new Mission Bay Campus have not yet been determined, any analysis to assess emergency vehicle access impacts at the Mission Bay Campus would be required as part of a subsequent environmental review, once these details have been determined.

4.4.8 Construction Traffic Impacts

Long-term (Phase 2) actions under Alternative 3 do not propose any major construction-related activities at the Fort Miley Campus. As such, there would be no additional construction impacts beyond what was identified in Section 3.4.8 for 2020 Short-term Alternative 3 Conditions. Construction impacts at the potential new Mission Bay Campus are discussed below.

Mission Bay Campus

Because a specific location and detailed facilities plan for the potential new Mission Bay Campus have not yet been determined, any analysis to assess freight loading impacts at the Mission Bay Campus would be required as part of a subsequent environmental review, once these details have been determined.

4.5 2027 Long-term Conclusions

The operation of new facilities and structures proposed under Phase 2 of the LRDP is not expected to result in any significant operational impacts on traffic, transit, bicycle, pedestrian, vehicle parking, freight loading, or emergency vehicle access conditions at the Fort Miley Campus. However, construction-related activities in the long-term time frame under Alternative 1 could potentially result in temporary but significant impacts on traffic and transportation, vehicle parking, air quality, noise, and vibration at the Campus itself or in the immediate vicinity. These impacts and associated mitigation measures are discussed in more detail in Section 4.3.8.

A specific location and detailed facilities plan for the new Mission Bay Campus have yet to be determined, and, as such, analysis of transportation-related impacts at the Mission Bay Campus would be required as part of a subsequent environmental review, once these details have been determined.

5.0 Cumulative Effects

The analysis of cumulative effects evaluates conditions in Year 2040, including planned and proposed future development growth and transportation network changes in the study area, as well as background growth in travel demand in the City and region.

5.1 Methods and Assumptions

5.1.1 Background Growth

The methodologies used to develop traffic and transit forecasts in the cumulative time frame are identical to those used for the short-term time frame, as summarized in Section 3.1.1.

5.1.2 Transportation Network Modifications

The analysis of cumulative effects includes the same changes to the transportation network identified in the analysis of short-term effects, summarized in Section 3.1.2. No additional relevant changes to the transportation network by Year 2040, beyond what was identified for the short-term analysis, were identified for the cumulative analysis.

5.2 2040 Cumulative Alternative 4 Conditions

The following section summarizes the analysis results for 2040 Cumulative Alternative 4 Conditions, which is presented here first because it represents the “no action” (i.e., “baseline” or “no Project”) alternative, facilitating a comparison with the action alternatives (Alternative 1, Alternative 2, and Alternative 3) in the subsequent sections to determine Project impacts. For this reason, this section focuses on topics for which potential impacts of the Project are determined through quantitative analysis—namely, intersection and roadway segment operations for traffic conditions and Muni ridership and capacity for transit conditions. Topics for impacts evaluated qualitatively—such as bicycle, pedestrian, vehicle parking, freight loading, and emergency vehicle access conditions—are not discussed in this section.

5.2.1 Traffic Conditions

Intersections

Traffic volumes and LOS at the study intersections under 2040 Cumulative Alternative 4 Conditions are illustrated in Figure 18 and summarized in Table 38, respectively.

Table 38: Intersection Levels of Service— 2040 Cumulative Alternative 4 Conditions (Weekday P.M. Peak Hour)

Intersection		Control Type	Existing Conditions		2020 Short-term Alternative 4 Conditions		2027 Long-term Alternative 4 Conditions		2040 Long-term Alternative 4 Conditions	
			LOS	Delay(1)	LOS	Delay(1)	LOS	Delay(1)	LOS	Delay(1)
1	34th Avenue/Clement Street	All-Way Stop	B	11.8	B	12.4	B	12.9	B	14.1
2	42nd Avenue/Clement Street	All-Way Stop	B	11.0	B	11.4	B	11.8	B	12.7
3	43rd Avenue/Clement Street	All-Way Stop	B	11.7	B	12.3	B	12.8	B	14.0
4	42nd Avenue/Point Lobos Avenue	All-Way Stop	B	12.4	B	13.1	B	13.7	C	15.3
5	43rd Avenue/Point Lobos Avenue	All-Way Stop	B	14.2	C	15.1	C	16.2	C	19.0

Source: Data compiled by AECOM in 2014

Notes:
LOS = level of service
(1) Delay in seconds per vehicle.

As shown in Table 38, all five study intersections would operate at acceptable conditions (LOS C or better) during the weekday p.m. peak hour under 2040 Cumulative Alternative 4 Conditions.

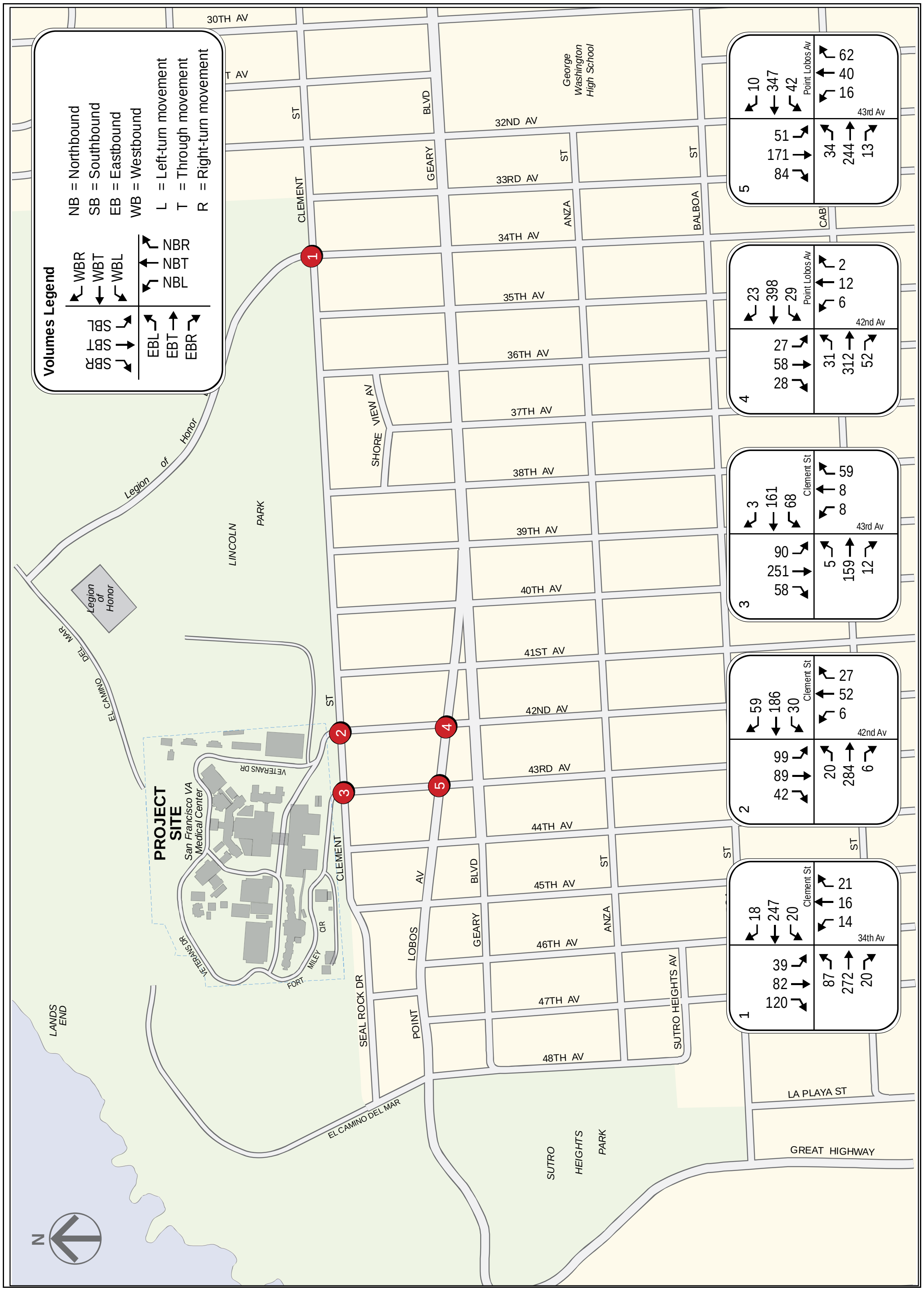

Figure 18: Intersection Traffic Volumes—2040 Cumulative Alternative 4 Conditions

Roadway Segments

The expected LOS at the two study roadway segments under 2040 Cumulative Alternative 4 Conditions is summarized in Table 39. As shown in Table 39, both roadway segments would operate at acceptable conditions (LOS D or better) during the weekday p.m. peak hour under 2040 Cumulative Alternative 4 Conditions.

Table 39: Roadway Segment Levels of Service—2040 Cumulative Alternative 4 Conditions (Weekday P.M. Peak Hour)

Roadway Segment	Direction	Existing Conditions		2020 Short-term Alternative 4 Conditions		2027 Long-term Alternative 4 Conditions		2040 Cumulative Alternative 4 Conditions	
		LOS	v/c Ratio	LOS	v/c Ratio	LOS	v/c Ratio	LOS	v/c Ratio
1 42nd Avenue	Northbound	A	0.16	A	0.17	A	0.18	A	0.19
Between Clement Street and Point Lobos Avenue	Southbound	A	0.24	A	0.25	A	0.26	A	0.28
2 43rd Avenue	Northbound	A	0.16	A	0.17	A	0.18	A	0.19
Between Clement Street and Point Lobos Avenue	Southbound	C	0.64	C	0.66	C	0.69	D	0.73

Notes: LOS = level of service; v/c = volume-to-capacity
Source: Data compiled by AECOM in 2014

5.2.2 Transit Conditions

Public Transit

Table 40 summarizes ridership, capacity, and capacity utilization of transit services in the Geary Corridor under 2040 Cumulative Alternative 4 Conditions. As shown in Table 40, ridership would increase from Existing Conditions. Although inbound service in the Geary Corridor during the weekday p.m. peak hour would remain below the 85 percent threshold, outbound service would exceed the threshold, reaching 93 percent capacity utilization.

Table 40: Muni Ridership and Capacity—2040 Cumulative Alternative 4 Conditions (Weekday P.M. Peak Hour)

Direction	Existing Conditions			2020 Short-term Alternative 4 Conditions			2027 Long-term Alternative 4 Conditions			2040 Cumulative Alternative 4 Conditions		
	Ridership	Capacity	Utilization	Ridership	Capacity	Utilization	Ridership	Capacity	Utilization	Ridership	Capacity	Utilization
Inbound	908	1,777	51%	1,142	2,820	41%	1,324	2,820	47%	1,661	2,820	59%
Outbound	1,814	2,528	72%	2,359	3,826	62%	2,783	3,826	73%	3,570	3,826	93%

Source: SFMTA, 2011.
Notes:
Ridership data based on conditions at the MLP for each line.
Bold indicates capacity utilization of 85 percent or greater.

5.3 2040 Cumulative Alternative 1 Conditions

The following section summarizes the analysis results for 2040 Cumulative Alternative 1 Conditions. For quantitative analyses, results are compared against the results for 2040 Cumulative Alternative 4 Conditions to determine any potential impacts as a result of the Project. For other analyses, conditions with the Project and any potential impacts are discussed qualitatively.

5.3.1 Operational Traffic Impacts

Intersections

The Project's estimated vehicle-trips under Phase 1 and Phase 2 of Alternative 1, as summarized in Table 20, were added to traffic volumes for 2027 Long-term Alternative 4 Conditions to derive traffic volumes for 2040 Cumulative Alternative 1 Conditions traffic volumes, illustrated in Figure 19. The resulting LOS at the study intersections under 2040 Cumulative Alternative 1 Conditions is summarized in Table 41.

Table 41: Intersection Levels of Service—2040 Cumulative Alternative 1 Conditions (Weekday P.M. Peak Hour)

Intersection		Control Type	2040 Cumulative Alternative 4 Conditions		2040 Cumulative Alternative 1 Conditions	
			LOS	Delay (seconds/ vehicle)	LOS	Delay (seconds/ vehicle)
1	34th Avenue/Clement Street	All-Way Stop	B	14.1	C	17.0
2	42nd Avenue/Clement Street	All-Way Stop	B	12.7	C	16.9
3	43rd Avenue/Clement Street	All-Way Stop	B	14.0	C	20.3
4	42nd Avenue/Point Lobos Avenue	All-Way Stop	C	15.3	C	18.4
5	43rd Avenue/Point Lobos Avenue	All-Way Stop	C	19.0	C	23.3

Notes: LOS = level of service
Source: Data compiled by AECOM in 2014

As shown in Table 41, all five study intersections would operate at acceptable conditions (LOS C or better) during the weekday p.m. peak hour under 2040 Cumulative Alternative 1 Conditions. As such, the Project would not result in, or make a considerable contribution to, a significant operational impact at any study intersections.

Roadway Segments

Roadway segment LOS for 2040 Cumulative Alternative 1 Conditions is summarized in Table 42.

Table 42: Roadway Segment Levels of Service—2040 Cumulative Alternative 1 Conditions (Weekday P.M. Peak Hour)

Roadway Segment		Direction	2040 Cumulative Alternative 4 Conditions		2040 Cumulative Alternative 1 Conditions	
			LOS	v/c Ratio	LOS	v/c Ratio
1	42nd Avenue	Northbound	A	0.19	A	0.27
	Between Clement Street and Point Lobos Avenue	Southbound	A	0.28	B	0.36
2	43rd Avenue	Northbound	A	0.19	A	0.24
	Between Clement Street and Point Lobos Avenue	Southbound	D	0.73	D	0.84

Notes: LOS = level of service; v/c = volume-to-capacity
Source: Data compiled by AECOM in 2014

As shown in Table 42, both roadway segments would operate at acceptable conditions (LOS D or better) during the weekday p.m. peak hour under 2040 Cumulative Alternative 1 Conditions. As such, the Project would not result in, or make a considerable contribution to, a significant operational impact on any roadway segments.

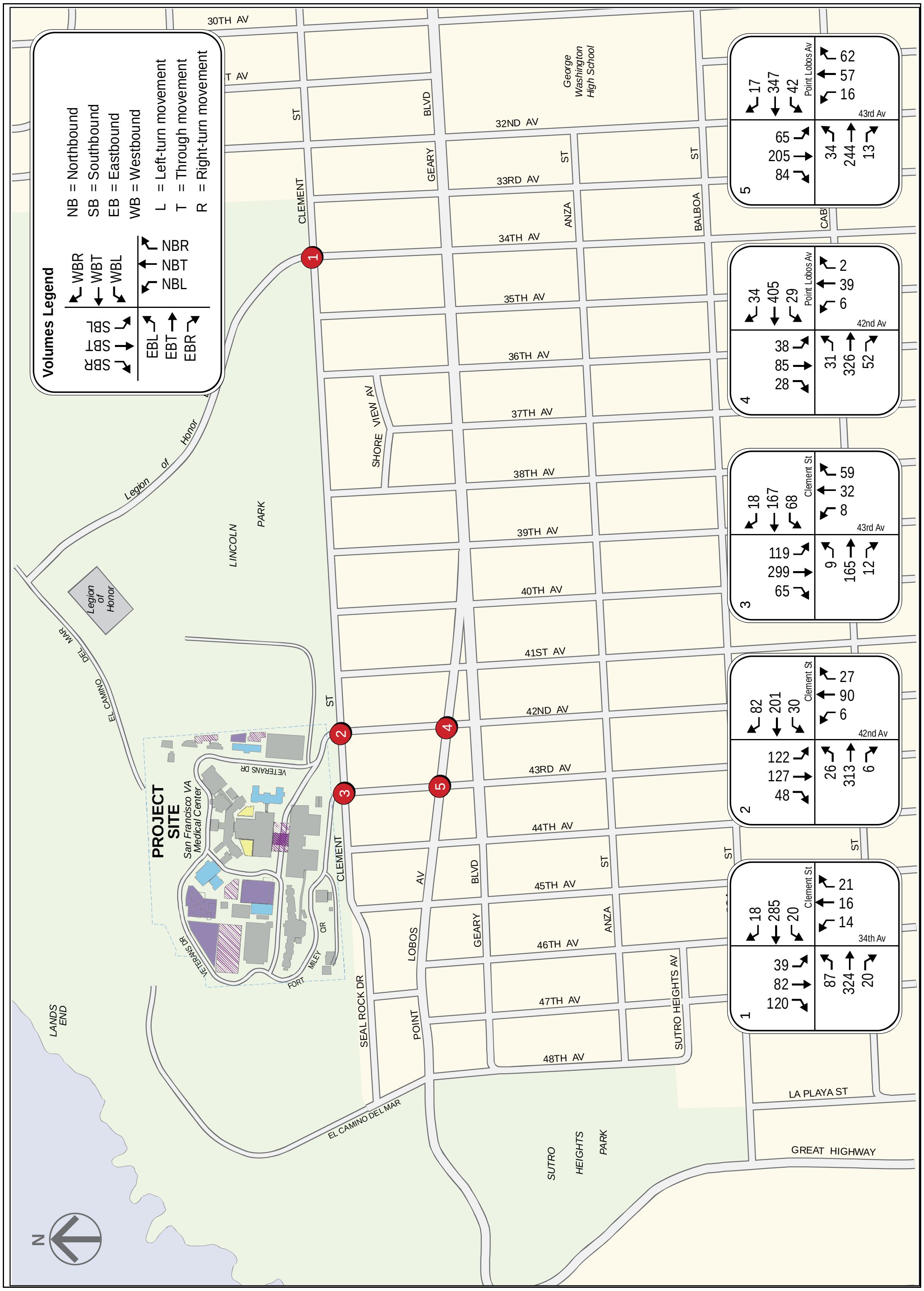

Figure 19: Intersection Traffic Volumes—2040 Cumulative Alternative 1 Conditions

Passenger Vehicle Access

Passenger vehicle access conditions under 2040 Cumulative Alternative 1 Conditions are expected to be similar to those under 2027 Long-term Alternative 1 Conditions, as summarized in Section 4.3.1. Overall, the Project is not expected to result in, or make a considerable contribution to, a significant operational impact on passenger vehicle access.

East Fort Miley Access

East Fort Miley access conditions under 2040 Cumulative Alternative 1 Conditions are expected to be similar to those under 2027 Long-term Alternative 1 Conditions, as summarized in Section 4.3.1. Overall, the Project is not expected to result in, or make a considerable contribution to, a significant operational impact on GGNRA access into and out of East Fort Miley.

5.3.2 Operational Transit Impacts

Public Transit

Ridership and Capacity Effects

As shown in Table 20, Alternative 1 would generate 215 transit trips (91 inbound to the Project site and 124 outbound from the Project site) during the weekday p.m. peak hour when combining ridership generated by both short-term and long-term actions. As discussed in Section 3.3.2, the Campus's location at the outer end of the Geary Corridor means that the commute direction for the Project constitutes the "reverse commute" direction. Trips heading inbound to the Project site would take outbound transit services in the Geary Corridor, and trips heading outbound from the Project site would take inbound transit services in the Geary Corridor.

In particular, outbound transit service in the Geary Corridor is expected to operate at 93 percent capacity utilization under 2040 Cumulative Alternative 4 Conditions, exceeding the 85 percent threshold as shown in Table 40. The addition of up to 91 passengers as a result of the Project would increase capacity utilization to 96 percent. However, the added Project ridership would contribute only 3.7 percent of the total ridership in the corridor, which would not represent a considerable contribution to the total ridership. In the opposite direction, inbound transit service in the Geary Corridor is expected to operate at only 59 percent capacity utilization during the weekday p.m. peak hour. Even with the addition of up to 124 new transit riders generated by the Project, capacity utilization would still only increase to 63 percent, well below the 85 percent threshold.

Similar to 2020 Short-term Alternative 1 Conditions as discussed in Section 3.3.2, it is likely that only some of these 124 new transit riders leaving the Project site would choose to take Muni buses in the Geary Corridor. Many of these riders would be expected to use the commuter shuttle services provided by SFVAMC, such that the actual increase in capacity utilization on inbound buses in the Geary Corridor is expected to be less than as described above.

Overall, the Project is not expected to result in, or make a considerable contribution to, a significant operational impact on Muni capacity in either direction in the Geary Corridor.

Other Effects

Other conditions for Muni service under 2040 Cumulative Alternative 1 Conditions are expected to be similar to those under 2027 Long-term Alternative 1 Conditions, as summarized in Section 4.3.2. Overall, the Project is not expected to result in, or make a considerable contribution to, a significant operational impact on Muni service.

SFVAMC Shuttle Services

Transit conditions for shuttle services under 2040 Cumulative Alternative 1 Conditions are expected to be similar to those under 2027 Long-term Alternative 1 Conditions, as summarized in Section 4.3.2. Overall, the Project is not expected to result in, or make a considerable contribution to, a significant operational impact on shuttle services.

Taxi Services

Conditions for taxi services under 2040 Cumulative Alternative 1 Conditions are expected to be similar to those under 2027 Long-term Alternative 1 Conditions, as summarized in Section 4.3.2. Overall, the Project is not expected to result in, or make a considerable contribution to, a significant operational impact on taxi services.

5.3.3 Operational Bicycle Impacts

Bicycle conditions under 2040 Cumulative Alternative 1 Conditions are expected to be similar to those under 2027 Long-term Alternative 1 Conditions, as summarized in Section 4.3.3. Overall, the Project is not expected to result in, or make a considerable contribution to, a significant operational impact on bicycle conditions.

5.3.4 Operational Pedestrian Impacts

Pedestrian conditions under 2040 Cumulative Alternative 1 Conditions are expected to be similar to those under 2027 Long-term Alternative 1 Conditions, as summarized in Section 4.3.4. Overall, the Project is not expected to result in, or make a considerable contribution to, a significant operational impact on pedestrian conditions.

5.3.5 Operational Vehicle Parking Impacts

Vehicle parking conditions under 2040 Cumulative Alternative 1 Conditions are expected to be similar to those under 2027 Long-term Alternative 1 Conditions, as summarized in Section 4.3.5. Overall, the Project is not expected to result in, or make a considerable contribution to, a significant operational impact on vehicle parking conditions.

5.3.6 Operational Freight Loading Impacts

Freight loading conditions under 2040 Cumulative Alternative 1 Conditions are expected to be similar to those under 2027 Long-term Alternative 1 Conditions, as summarized in Section 4.3.6. Overall, the Project is not expected to result in, or make a considerable contribution to, a significant operational impact on freight loading conditions.

5.3.7 Operational Emergency Vehicle Access Impacts

Emergency vehicle access conditions under 2040 Cumulative Alternative 1 Conditions are expected to be similar to those under 2027 Long-term Alternative 1 Conditions, as summarized in Section 4.3.7. Overall, the Project is not expected to result in, or make a considerable contribution to, a significant operational impact on emergency vehicle access conditions.

5.3.8 Construction Impacts

At this time, there are no foreseeable construction activities on or in the immediate vicinity of the Campus in the cumulative time frame. As a result, no construction-related transportation impacts are expected.

5.4 2040 Cumulative Alternative 3 Conditions

The following section summarizes the analysis results for 2040 Cumulative Alternative 3 Conditions. For quantitative analyses, results are compared against the results for 2040 Cumulative Alternative 4 Conditions to determine any potential impacts as a result of the Project. For other analyses, conditions with the Project and any potential impacts are discussed qualitatively.

Because a specific location and detailed facilities plan for an extension campus in Mission Bay have yet to be determined, a detailed quantitative analysis of transportation impacts at the Mission Bay Campus has not been conducted. The quantitative analysis of Alternative 3 in this section instead focuses on the Fort Miley Campus and the associated LRDP short-term (Phase 1) actions completed there under Alternative 3. Further analysis to assess transportation impacts at the Mission Bay Campus would be required as part of a subsequent environmental review once a specific location and detailed facilities plan have been identified.

5.4.1 Operational Traffic Impacts

As stated above, the quantitative analysis of operational traffic impacts under 2040 Cumulative Alternative 3 Conditions focuses on the Fort Miley Campus and the LRDP short-term actions completed there under Alternative 3.

Intersections

The estimated vehicle-trips under Phase 1 of Alternative 3, as summarized in Table 21, were added to traffic volumes for 2040 Cumulative Alternative 4 Conditions to derive traffic volumes for 2040 Cumulative Alternative 3 Conditions, illustrated in Figure 20. The resulting LOS at the study intersections is summarized in Table 43.

As shown in Table 43, all five study intersections would operate at acceptable conditions (LOS C or better) during the weekday p.m. peak hour under 2040 Cumulative Alternative 3 Conditions. As such, the Project would not result in, or make a considerable contribution to, a significant operational impact at any study intersections.

Table 43: Intersection Levels of Service—2040 Cumulative Alternative 3 Conditions (Weekday P.M. Peak Hour)

Intersection		Control Type	2040 Cumulative Alternative 4 Conditions		2040 Cumulative Alternative 3 Conditions	
			LOS	Delay (seconds/ vehicle)	LOS	Delay (seconds/ vehicle)
1	34th Avenue/Clement Street	All-Way Stop	B	14.1	B	14.7
2	42nd Avenue/Clement Street	All-Way Stop	B	12.7	B	13.2
3	43rd Avenue/Clement Street	All-Way Stop	B	14.0	C	16.1
4	42nd Avenue/Point Lobos Avenue	All-Way Stop	C	15.3	C	15.6
5	43rd Avenue/Point Lobos Avenue	All-Way Stop	C	19.0	C	20.4

Notes: LOS = level of service
Source: Data compiled by AECOM in 2014

Roadway Segments

Roadway segment LOS for 2040 Cumulative Alternative 3 Conditions is summarized in Table 44. As shown in Table 44, both roadway segments would operate at acceptable conditions (LOS D or better) during the weekday p.m. peak hour under 2040 Cumulative Alternative 3 Conditions. As such, the Project would not result in, or make a considerable contribution to, a significant operational impact on any roadway segments.

Table 44: Roadway Segment Levels of Service—2040 Cumulative Alternative 3 Conditions (Weekday P.M. Peak Hour)

Roadway Segment		Direction	2040 Cumulative Alternative 4 Conditions		2040 Cumulative Alternative 3 Conditions	
			LOS	v/c Ratio	LOS	v/c Ratio
1	42nd Avenue	Northbound	A	0.19	A	0.19
	Between Clement Street and Point Lobos Avenue	Southbound	A	0.28	B	0.28
2	43rd Avenue	Northbound	A	0.19	A	0.19
	Between Clement Street and Point Lobos Avenue	Southbound	D	0.73	D	0.79

Notes: LOS = level of service; v/c = volume-to-capacity
Source: Data compiled by AECOM in 2014

Passenger Vehicle Access

Passenger vehicle access conditions under 2040 Cumulative Alternative 3 Conditions are expected to be similar to those under 2027 Long-term Alternative 3 Conditions, as summarized in Section 4.4.1. Overall, the Project is not expected to result in, or make a considerable contribution to, a significant operational impact on passenger vehicle access.

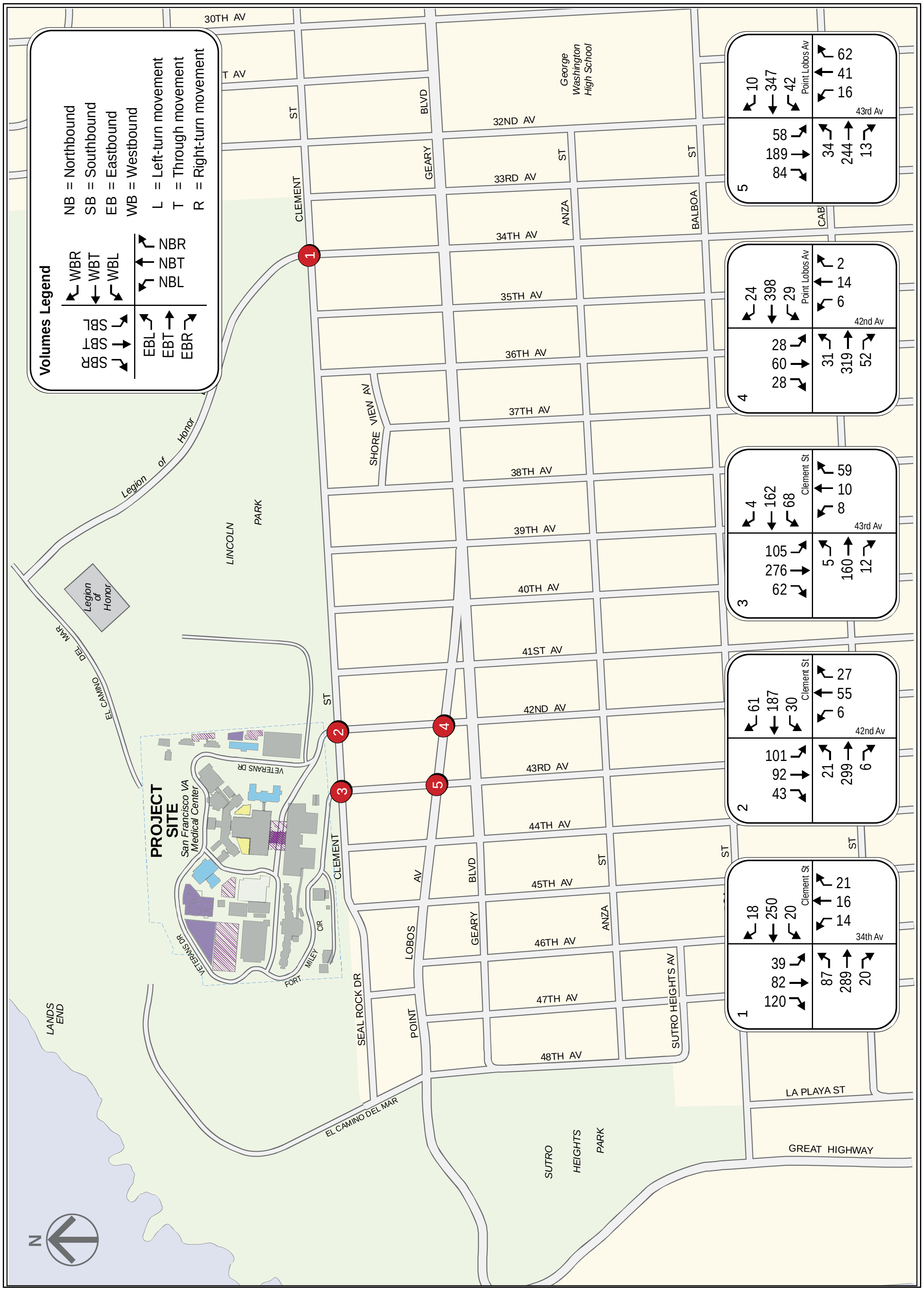

Figure 20: Intersection Traffic Volumes—2040 Cumulative Alternative 3 Conditions

East Fort Miley Access

East Fort Miley access conditions under 2040 Cumulative Alternative 3 Conditions are expected to be similar to those under 2027 Long-term Alternative 3 Conditions, as summarized in Section 4.4.1. Overall, the Project is not expected to result in, or make a considerable contribution to, a significant operational impact on GGNRA access into and out of East Fort Miley.

Mission Bay Campus

Because a specific location and detailed facilities plan for the potential new Mission Bay Campus have not yet been determined, further analysis to assess traffic impacts at the Mission Bay Campus would be required as part of a subsequent environmental review, once these details have been determined.

5.4.2 Operational Transit Impacts

Public Transit

As stated above, the quantitative analysis of operational transit impacts under 2027 Long-term Alternative 3 Conditions focuses on the Fort Miley Campus and the LRDP short-term actions completed there under Alternative 3.

Ridership and Capacity Effects
As shown in Table 21, Alternative 3 would generate 45 transit trips (six inbound to the Campus and 39 outbound from the Campus) during the weekday p.m. peak hour, far fewer than Alternative 1. As discussed in Section 3.3.2, the Campus's location at the outer end of the Geary Corridor means that the commute direction for the Project constitutes the "reverse commute" direction. Trips heading inbound to the Project site would take outbound transit services in the Geary Corridor, and trips heading outbound from the Project site would take inbound transit services in the Geary Corridor.

In particular, outbound transit service in Geary Corridor is expected to operate at 93 percent capacity utilization under 2040 Cumulative Alternative 4 Conditions, exceeding the 85 percent threshold as shown in Table 40. The addition of up to six passengers as a result of the Project would represent only a 0.1 percent increase in capacity utilization. This level of ridership increase would not materially affect capacity utilization, which would continue to remain at 93 percent under 2040 Cumulative Alternative 3 Conditions. In the opposite direction, inbound transit service in the Geary Corridor is expected to operate at only 59 percent capacity utilization during the weekday p.m. peak hour. Even with the addition of up to 39 new transit riders generated by the Project, capacity utilization would only increase to 60 percent, well below the 85 percent threshold.

Overall, the Project is not expected to result in, or make a considerable contribution to, a significant operational impact on Muni capacity in either direction in the Geary Corridor.

Other Effects
Other conditions for Muni service under 2040 Cumulative Alternative 3 Conditions are expected to be similar to those under 2027 Long-term Alternative 3 Conditions, as summarized in Section 4.4.2. Overall, the Project is not expected to result in, or make a considerable contribution to, a significant operational impact on Muni service.

SFVAMC Shuttle Services

Transit conditions for shuttle services under 2040 Cumulative Alternative 3 Conditions are expected to be similar to those under 2027 Long-term Alternative 3 Conditions, as summarized in Section 4.4.2. Overall, the Project is not expected to result in, or make a considerable contribution to, a significant operational impact on shuttle services.

Taxi Services

Conditions for taxi services under 2040 Cumulative Alternative 3 Conditions are expected to be similar to those under 2027 Long-term Alternative 3 Conditions, as summarized in Section 4.4.2. Overall, the Project is not expected to result in, or make a considerable contribution to, a significant operational impact on taxi services.

Mission Bay Campus

Because a specific location and detailed facilities plan for the potential new Mission Bay Campus have not yet been determined, further analysis to assess transit impacts at the Mission Bay Campus would be required as part of a subsequent environmental review, once these details have been determined.

5.4.3 Operational Bicycle Impacts

Bicycle conditions under 2040 Cumulative Alternative 3 Conditions are expected to be similar to those under 2027 Long-term Alternative 3 Conditions, as summarized in Section 4.4.3. Overall, the Project is not expected to result in, or make a considerable contribution to, a significant operational impact on bicycle conditions.

Mission Bay Campus

Because a specific location and detailed facilities plan for the potential new Mission Bay Campus have not yet been determined, further analysis to assess bicycle impacts at the Mission Bay Campus would be required as part of a subsequent environmental review, once these details have been determined.

5.4.4 Operational Pedestrian Impacts

Pedestrian conditions under 2040 Cumulative Alternative 3 Conditions are expected to be similar to those under 2027 Long-term Alternative 3 Conditions, as summarized in Section 4.4.4. Overall, the Project is not expected to result in, or make a considerable contribution to, a significant operational impact on pedestrian conditions.

Mission Bay Campus

Because a specific location and detailed facilities plan for the potential new Mission Bay Campus have not yet been determined, further analysis to assess pedestrian impacts at the Mission Bay Campus would be required as part of a subsequent environmental review, once these details have been determined.

5.4.5 Operational Vehicle Parking Impacts

Parking conditions under 2040 Cumulative Alternative 3 Conditions are expected to be similar to those under 2027 Long-term Alternative 3 Conditions, as summarized in Section 4.4.5. Overall, the Project is not expected to result in, or make a considerable contribution to, a significant operational impact on vehicle parking conditions.

5.4.6 Operational Freight Loading Impacts

Freight loading conditions under 2040 Cumulative Alternative 3 Conditions are expected to be similar to those under 2027 Long-term Alternative 3 Conditions, as summarized in Section 4.4.6. Overall, the Project is not expected to result in, or make a considerable contribution to, a significant operational impact on freight loading conditions.

Mission Bay Campus

Because a specific location and detailed facilities plan for the potential new Mission Bay Campus have not yet been determined, further analysis to assess freight loading impacts at the Mission Bay Campus would be required as part of a subsequent environmental review, once these details have been determined.

5.4.7 Operational Emergency Vehicle Access Impacts

Emergency vehicle access conditions under 2040 Cumulative Alternative 3 Conditions are expected to be similar to those under 2027 Long-term Alternative 3 Conditions, as summarized in Section 4.4.7. Overall, the Project is not expected to result in, or make a considerable contribution to, a significant operational impact on emergency vehicle access conditions.

Mission Bay Campus

Because a specific location and detailed facilities plan for the potential new Mission Bay Campus have not yet been determined, any analysis to assess emergency vehicle access impacts at the Mission Bay Campus would be required as part of a subsequent environmental review, once these details have been determined.

5.4.8 Construction Traffic Impacts

At this time, there are no foreseeable construction activities on or in the immediate vicinity of the Campus in the cumulative time frame. As a result, no construction-related transportation impacts are expected.

Mission Bay Campus

Because the potential new Mission Bay Campus would be located in the Mission Bay area, which is currently undergoing redevelopment, there may be construction activities around the proposed site in the cumulative time frame. Further analysis of construction impacts in the cumulative time frame would be required once a specific location and detailed facilities plan for the Mission Bay Campus has been determined.

5.5 2040 Cumulative Conclusion

Neither Alternative 1 nor Alternative 3 is expected to result in, or make a considerable contribution to, any significant operational impacts on traffic, transit, bicycle, pedestrian, vehicle parking, freight loading, or emergency vehicle access conditions at the Fort Miley Campus.

A specific location and detailed facilities plan for the new Mission Bay Campus have yet to be determined, and, as such, analysis of transportation-related impacts at the Mission Bay Campus would be required as part of a subsequent environmental review, once these details have been determined.

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AECOM Transportation December 19, 2014

San Francisco VA Medical Center Long Range Development Plan

Transportation Impact Study (TIS) Technical Appendices

Prepared for the Department of Veterans Affairs

San Francisco VA Medical Center
Long Range Development Plan
Transportation Impact Study (TIS)
Technical Appendices

Prepared for the Department of Veterans Affairs

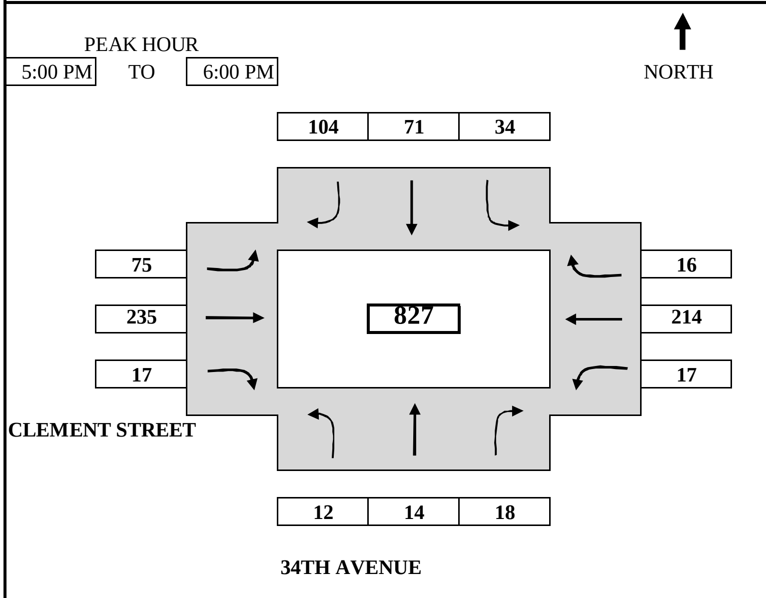
December 19, 2014

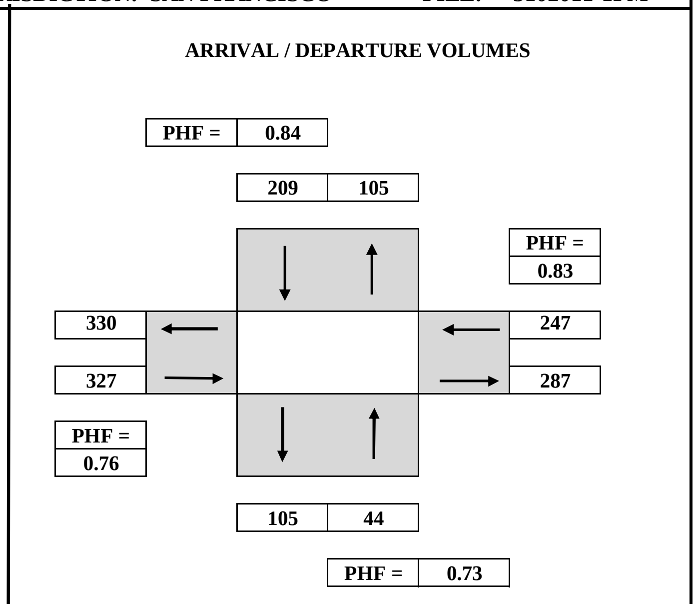
Appendix A
Intersection Turning Movement Counts

B.A.Y.M.E.T.R.I.C.S.

INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	SFVAMC - DATA COLLECTION	SURVEY DATE:	2/15/2011	DAY:	TUESDAY
N-S APPROACH:	34TH AVENUE	SURVEY TIME:	4:00 PM	TO	6:00 PM
E-W APPROACH	CLEMENT STREET	JURISDICTION:	SAN FRANCISCO	FILE:	3102011-1PM





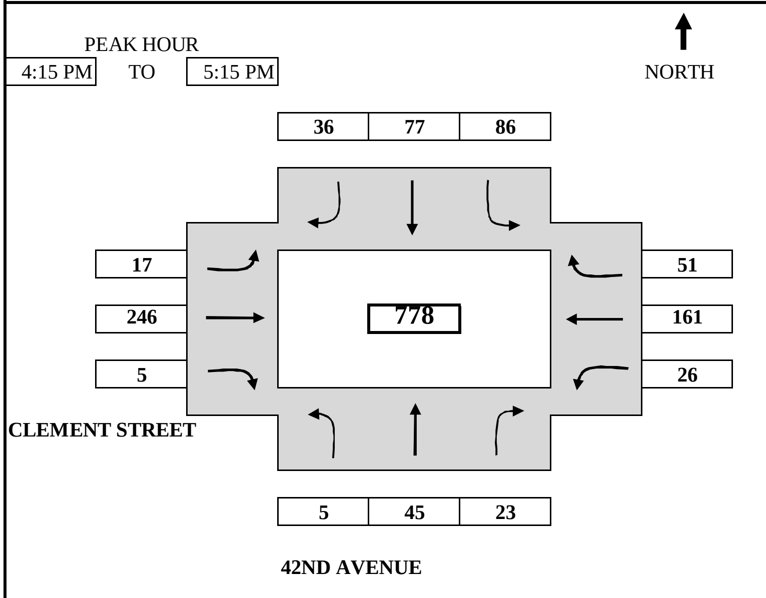
TIME	PERIOD		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
From		To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	
SURVEY DATA															
4:00 PM	to	4:15 PM	0	8	4	9	11	16	23	53	3	1	39	9	**176**
4:15 PM	to	4:30 PM	2	12	10	16	23	30	44	118	8	9	78	10	**360**
4:30 PM	to	4:45 PM	2	19	15	25	32	48	69	181	14	13	124	14	**556**
4:45 PM	to	5:00 PM	5	25	20	29	52	66	86	250	16	17	173	19	**758**
5:00 PM	to	5:15 PM	9	26	24	41	66	88	115	322	22	22	220	24	**979**
5:15 PM	to	5:30 PM	11	32	31	46	90	112	132	382	25	23	259	28	**1171**
5:30 PM	to	5:45 PM	14	36	33	58	110	142	147	431	29	28	322	32	**1382**
5:45 PM	to	6:00 PM	17	39	38	63	123	170	161	485	33	34	387	35	**1585**
TOTAL BY PERIOD															
4:00 PM	to	4:15 PM	0	8	4	9	11	16	23	53	3	1	39	9	**176**
4:15 PM	to	4:30 PM	2	4	6	7	12	14	21	65	5	8	39	1	**184**
4:30 PM	to	4:45 PM	0	7	5	9	9	18	25	63	6	4	46	4	**196**
4:45 PM	to	5:00 PM	3	6	5	4	20	18	17	69	2	4	49	5	**202**
5:00 PM	to	5:15 PM	4	1	4	12	14	22	29	72	6	5	47	5	**221**
5:15 PM	to	5:30 PM	2	6	7	5	24	24	17	60	3	1	39	4	**192**
5:30 PM	to	5:45 PM	3	4	2	12	20	30	15	49	4	5	63	4	**211**
5:45 PM	to	6:00 PM	3	3	5	5	13	28	14	54	4	6	65	3	**203**
HOURLY TOTALS															
4:00 PM	to	5:00 PM	5	25	20	29	52	66	86	250	16	17	173	19	**758**
4:15 PM	to	5:15 PM	9	18	20	32	55	72	92	269	19	21	181	15	**803**
4:30 PM	to	5:30 PM	9	20	21	30	67	82	88	264	17	14	181	18	**811**
4:45 PM	to	5:45 PM	12	17	18	33	78	94	78	250	15	15	198	18	**826**
5:00 PM	to	6:00 PM	12	14	18	34	71	104	75	235	17	17	214	16	**827**

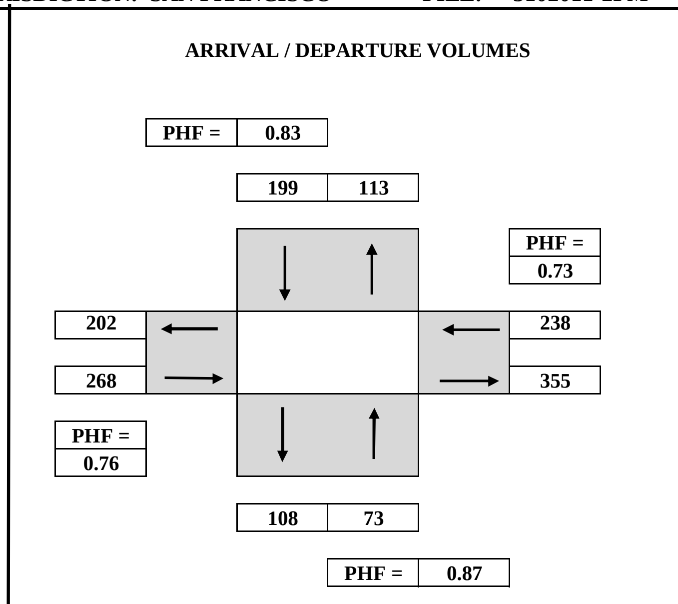
TEL: (510) 232 - 1271 FAX: (510) 232 - 1272

B.A.Y.M.E.T.R.I.C.S.

INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	SFVAMC - DATA COLLECTION	SURVEY DATE:	2/15/2011	DAY:	TUESDAY
N-S APPROACH:	42ND AVENUE	SURVEY TIME:	4:00 PM	TO	6:00 PM
E-W APPROACH	CLEMENT STREET	JURISDICTION:	SAN FRANCISCO	FILE:	3102011-2PM





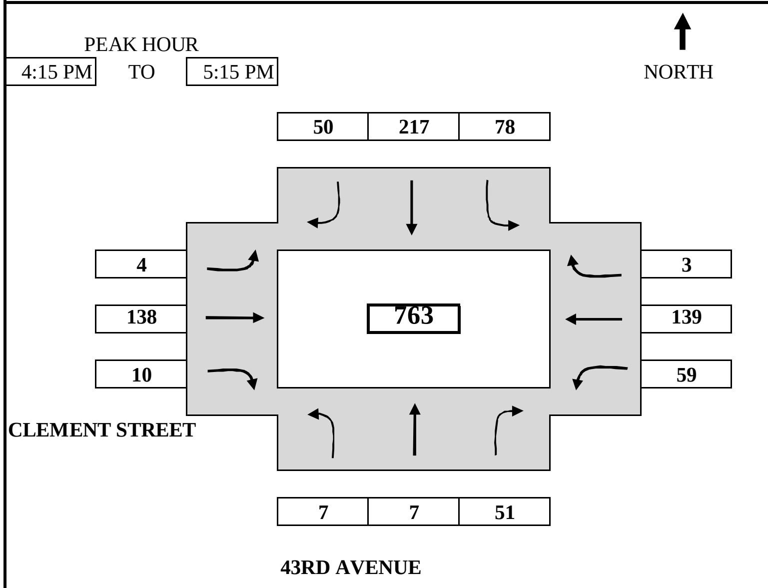
TIME From		PERIOD To	NORTHBOUND LEFT	NORTHBOUND THRU	NORTHBOUND RIGHT	SOUTHBOUND LEFT	SOUTHBOUND THRU	SOUTHBOUND RIGHT	EASTBOUND LEFT	EASTBOUND THRU	EASTBOUND RIGHT	WESTBOUND LEFT	WESTBOUND THRU	WESTBOUND RIGHT	TOTAL
SURVEY DATA															
4:00 PM	to	4:15 PM	1	7	3	17	22	8	4	53	1	4	34	11	**165**
4:15 PM	to	4:30 PM	3	16	9	36	41	16	10	134	2	9	63	24	**363**
4:30 PM	to	4:45 PM	5	28	16	60	62	22	16	182	2	15	99	37	**544**
4:45 PM	to	5:00 PM	5	41	19	83	82	39	20	233	5	22	140	49	**738**
5:00 PM	to	5:15 PM	6	52	26	103	99	44	21	299	6	30	195	62	**943**
5:15 PM	to	5:30 PM	7	56	36	118	110	50	26	353	7	38	225	74	**1100**
5:30 PM	to	5:45 PM	7	63	40	131	123	54	28	412	8	43	281	87	**1277**
5:45 PM	to	6:00 PM	8	71	45	146	139	61	33	454	10	50	345	97	**1459**
TOTAL BY PERIOD															
4:00 PM	to	4:15 PM	1	7	3	17	22	8	4	53	1	4	34	11	**165**
4:15 PM	to	4:30 PM	2	9	6	19	19	8	6	81	1	5	29	13	**198**
4:30 PM	to	4:45 PM	2	12	7	24	21	6	6	48	0	6	36	13	**181**
4:45 PM	to	5:00 PM	0	13	3	23	20	17	4	51	3	7	41	12	**194**
5:00 PM	to	5:15 PM	1	11	7	20	17	5	1	66	1	8	55	13	**205**
5:15 PM	to	5:30 PM	1	4	10	15	11	6	5	54	1	8	30	12	**157**
5:30 PM	to	5:45 PM	0	7	4	13	13	4	2	59	1	5	56	13	**177**
5:45 PM	to	6:00 PM	1	8	5	15	16	7	5	42	2	7	64	10	**182**
HOURLY TOTALS															
4:00 PM	to	5:00 PM	5	41	19	83	82	39	20	233	5	22	140	49	**738**
4:15 PM	to	5:15 PM	5	45	23	86	77	36	17	246	5	26	161	51	**778**
4:30 PM	to	5:30 PM	4	40	27	82	69	34	16	219	5	29	162	50	**737**
4:45 PM	to	5:45 PM	2	35	24	71	61	32	12	230	6	28	182	50	**733**
5:00 PM	to	6:00 PM	3	30	26	63	57	22	13	221	5	28	205	48	**721**

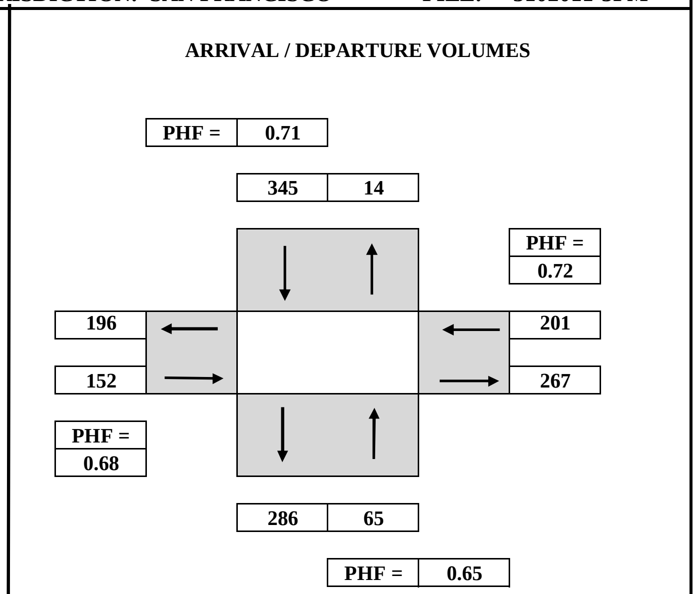
TEL: (510) 232 - 1271 FAX: (510) 232 - 1272

B.A.Y.M.E.T.R.I.C.S.

INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	SFVAMC - DATA COLLECTION	SURVEY DATE:	2/15/2011	DAY:	TUESDAY
N-S APPROACH:	43RD AVENUE	SURVEY TIME:	4:00 PM	TO	6:00 PM
E-W APPROACH	CLEMENT STREET	JURISDICTION:	SAN FRANCISCO	FILE:	3102011-3PM





TIME		PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
From		To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	
SURVEY DATA															
4:00 PM	to	4:15 PM	4	4	17	10	31	7	2	33	1	9	33	0	**151**
4:15 PM	to	4:30 PM	5	7	30	30	87	17	5	84	3	23	60	0	**351**
4:30 PM	to	4:45 PM	8	9	44	42	129	33	6	112	5	39	86	2	**515**
4:45 PM	to	5:00 PM	10	10	59	70	205	50	6	134	8	57	125	2	**736**
5:00 PM	to	5:15 PM	11	11	68	88	248	57	6	171	11	68	172	3	**914**
5:15 PM	to	5:30 PM	11	13	80	105	275	67	6	203	12	80	197	4	**1053**
5:30 PM	to	5:45 PM	13	15	90	113	299	73	6	244	15	98	239	5	**1210**
5:45 PM	to	6:00 PM	15	16	100	123	330	86	6	276	17	120	284	8	**1381**
TOTAL BY PERIOD															
4:00 PM	to	4:15 PM	4	4	17	10	31	7	2	33	1	9	33	0	**151**
4:15 PM	to	4:30 PM	1	3	13	20	56	10	3	51	2	14	27	0	**200**
4:30 PM	to	4:45 PM	3	2	14	12	42	16	1	28	2	16	26	2	**164**
4:45 PM	to	5:00 PM	2	1	15	28	76	17	0	22	3	18	39	0	**221**
5:00 PM	to	5:15 PM	1	1	9	18	43	7	0	37	3	11	47	1	**178**
5:15 PM	to	5:30 PM	0	2	12	17	27	10	0	32	1	12	25	1	**139**
5:30 PM	to	5:45 PM	2	2	10	8	24	6	0	41	3	18	42	1	**157**
5:45 PM	to	6:00 PM	2	1	10	10	31	13	0	32	2	22	45	3	**171**
HOURLY TOTALS															
4:00 PM	to	5:00 PM	10	10	59	70	205	50	6	134	8	57	125	2	**736**
4:15 PM	to	5:15 PM	7	7	51	78	217	50	4	138	10	59	139	3	**763**
4:30 PM	to	5:30 PM	6	6	50	75	188	50	1	119	9	57	137	4	**702**
4:45 PM	to	5:45 PM	5	6	46	71	170	40	0	132	10	59	153	3	**695**
5:00 PM	to	6:00 PM	5	6	41	53	125	36	0	142	9	63	159	6	**645**

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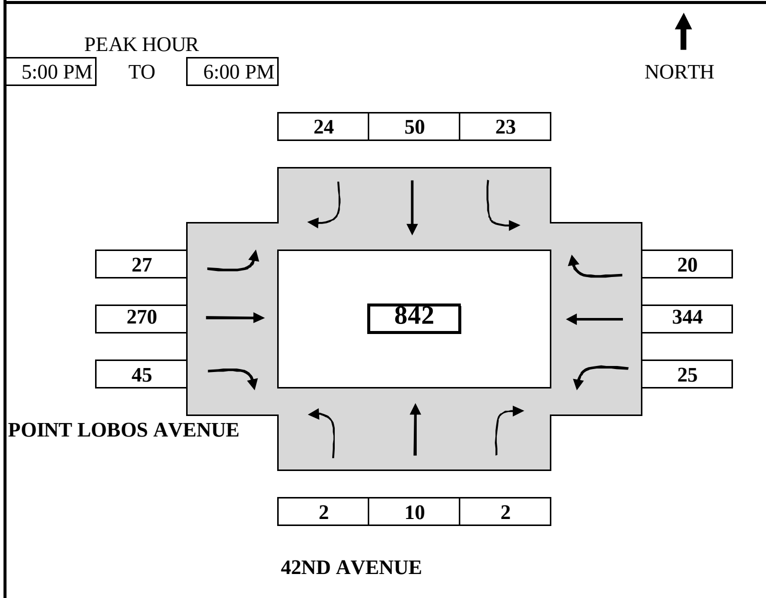
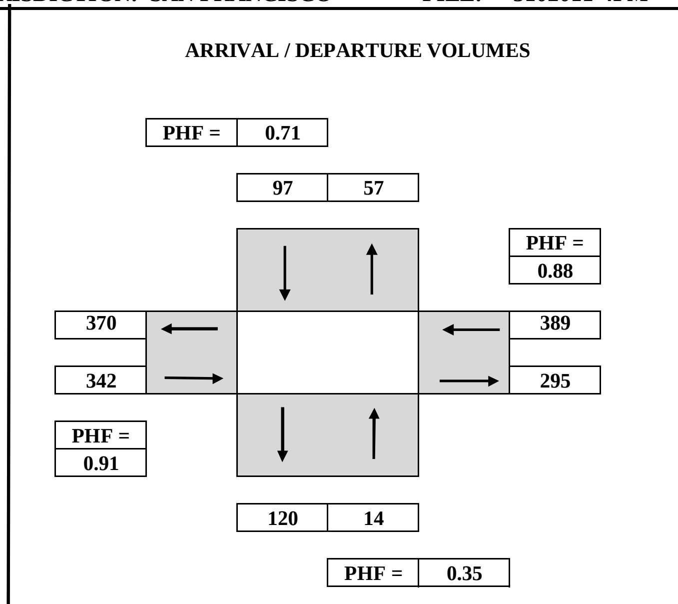
B.A.Y.M.E.T.R.I.C.S.

INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	SFVAMC - DATA COLLECTION	SURVEY DATE:	2/15/2011	DAY:	TUESDAY
N-S APPROACH:	42ND AVENUE	SURVEY TIME:	4:00 PM	TO	6:00 PM
E-W APPROACH	POINT LOBOS AVENUE	JURISDICTION:	SAN FRANCISCO	FILE:	3102011-4PM





TIME From		PERIOD To	NORTHBOUND LEFT	NORTHBOUND THRU	NORTHBOUND RIGHT	SOUTHBOUND LEFT	SOUTHBOUND THRU	SOUTHBOUND RIGHT	EASTBOUND LEFT	EASTBOUND THRU	EASTBOUND RIGHT	WESTBOUND LEFT	WESTBOUND THRU	WESTBOUND RIGHT	TOTAL
SURVEY DATA															
4:00 PM	to	4:15 PM	2	4	0	14	13	7	5	61	9	4	78	4	**201**
4:15 PM	to	4:30 PM	2	8	0	20	23	14	14	122	26	8	145	7	**389**
4:30 PM	to	4:45 PM	3	15	0	26	38	22	22	191	41	12	214	17	**601**
4:45 PM	to	5:00 PM	4	22	2	32	55	28	27	254	49	15	288	25	**801**
5:00 PM	to	5:15 PM	4	24	2	38	68	33	40	317	59	20	359	30	**994**
5:15 PM	to	5:30 PM	5	27	2	45	78	39	43	375	72	23	446	36	**1191**
5:30 PM	to	5:45 PM	5	29	3	49	90	47	47	444	87	32	541	42	**1416**
5:45 PM	to	6:00 PM	6	32	4	55	105	52	54	524	94	40	632	45	**1643**
TOTAL BY PERIOD															
4:00 PM	to	4:15 PM	2	4	0	14	13	7	5	61	9	4	78	4	**201**
4:15 PM	to	4:30 PM	0	4	0	6	10	7	9	61	17	4	67	3	**188**
4:30 PM	to	4:45 PM	1	7	0	6	15	8	8	69	15	4	69	10	**212**
4:45 PM	to	5:00 PM	1	7	2	6	17	6	5	63	8	3	74	8	**200**
5:00 PM	to	5:15 PM	0	2	0	6	13	5	13	63	10	5	71	5	**193**
5:15 PM	to	5:30 PM	1	3	0	7	10	6	3	58	13	3	87	6	**197**
5:30 PM	to	5:45 PM	0	2	1	4	12	8	4	69	15	9	95	6	**225**
5:45 PM	to	6:00 PM	1	3	1	6	15	5	7	80	7	8	91	3	**227**
HOURLY TOTALS															
4:00 PM	to	5:00 PM	4	22	2	32	55	28	27	254	49	15	288	25	**801**
4:15 PM	to	5:15 PM	2	20	2	24	55	26	35	256	50	16	281	26	**793**
4:30 PM	to	5:30 PM	3	19	2	25	55	25	29	253	46	15	301	29	**802**
4:45 PM	to	5:45 PM	2	14	3	23	52	25	25	253	46	20	327	25	**815**
5:00 PM	to	6:00 PM	2	10	2	23	50	24	27	270	45	25	344	20	**842**

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B.A.Y.M.E.T.R.I.C.S.

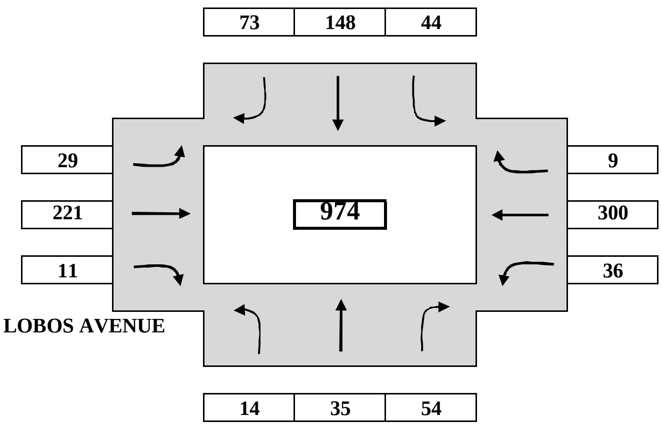
INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	SFVAMC - DATA COLLECTION	SURVEY DATE:	2/15/2011	DAY:	TUESDAY
N-S APPROACH:	43RD AVENUE	SURVEY TIME:	4:00 PM	TO	6:00 PM
E-W APPROACH	POINT LOBOS AVENUE	JURISDICTION:	SAN FRANCISCO	FILE:	3102011-5PM

PEAK HOUR

4:45 PM TO 5:45 PM

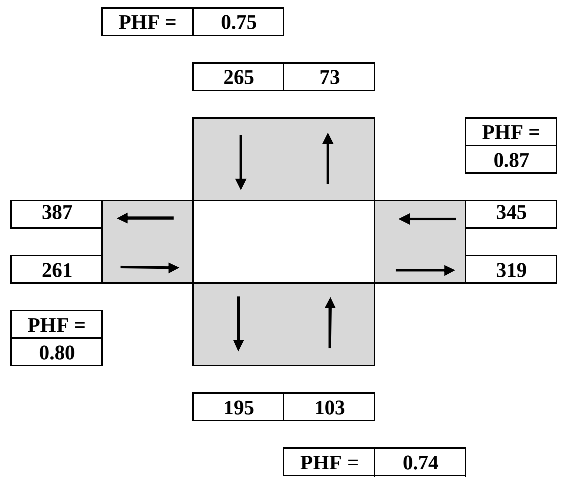
NORTH



POINT LOBOS AVENUE

43RD AVENUE

ARRIVAL / DEPARTURE VOLUMES



TIME		PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
From		To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	
SURVEY DATA															
4:00 PM	to	4:15 PM	0	17	9	13	23	12	8	59	2	11	73	3	**230**
4:15 PM	to	4:30 PM	2	30	26	24	67	29	13	111	4	22	133	4	**465**
4:30 PM	to	4:45 PM	6	42	45	35	96	40	18	170	6	31	196	8	**693**
4:45 PM	to	5:00 PM	10	53	52	51	142	66	27	227	11	39	263	11	**952**
5:00 PM	to	5:15 PM	13	60	71	61	183	88	32	278	13	44	328	13	**1184**
5:15 PM	to	5:30 PM	13	65	87	69	215	98	41	328	14	57	408	16	**1411**
5:30 PM	to	5:45 PM	20	77	99	79	244	113	47	391	17	67	496	17	**1667**
5:45 PM	to	6:00 PM	24	86	103	86	278	125	53	464	20	77	576	20	**1912**
TOTAL BY PERIOD															
4:00 PM	to	4:15 PM	0	17	9	13	23	12	8	59	2	11	73	3	**230**
4:15 PM	to	4:30 PM	2	13	17	11	44	17	5	52	2	11	60	1	**235**
4:30 PM	to	4:45 PM	4	12	19	11	29	11	5	59	2	9	63	4	**228**
4:45 PM	to	5:00 PM	4	11	7	16	46	26	9	57	5	8	67	3	**259**
5:00 PM	to	5:15 PM	3	7	19	10	41	22	5	51	2	5	65	2	**232**
5:15 PM	to	5:30 PM	0	5	16	8	32	10	9	50	1	13	80	3	**227**
5:30 PM	to	5:45 PM	7	12	12	10	29	15	6	63	3	10	88	1	**256**
5:45 PM	to	6:00 PM	4	9	4	7	34	12	6	73	3	10	80	3	**245**
HOURLY TOTALS															
4:00 PM	to	5:00 PM	10	53	52	51	142	66	27	227	11	39	263	11	**952**
4:15 PM	to	5:15 PM	13	43	62	48	160	76	24	219	11	33	255	10	**954**
4:30 PM	to	5:30 PM	11	35	61	45	148	69	28	217	10	35	275	12	**946**
4:45 PM	to	5:45 PM	14	35	54	44	148	73	29	221	11	36	300	9	**974**
5:00 PM	to	6:00 PM	14	33	51	35	136	59	26	237	9	38	313	9	**960**

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Appendix B
Intersection Level of Service Calculations

SFVAMC
Existing No Project
PM Peak Hour

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/Veh	Base V/C	Future LOS	Future Del/Veh	Future V/C	Change in
# 1 34th Ave / Clement St	B	11.8	0.525	B	11.8	0.525	+ 0.000 V/C
# 2 42nd Ave / Clement St	B	11.0	0.438	B	11.0	0.438	+ 0.000 V/C
# 3 43rd Avenue / Clement Street	B	11.7	0.550	B	11.7	0.550	+ 0.000 V/C
# 4 42nd Ave / Point Lobos Ave	B	12.4	0.571	B	12.4	0.571	+ 0.000 V/C
# 5 43rd Ave / Point Lobos Ave	B	14.2	0.617	B	14.2	0.617	+ 0.000 V/C

SFVAMC
Existing No Project
PM Peak Hour

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #1 34th Ave / Clement St

Cycle (sec):	100	Critical Vol./Cap.(X):	0.525
Loss Time (sec):	0	Average Delay (sec/veh):	11.8
Optimal Cycle:	0	Level Of Service:	B

Street Name:	34th Ave						Clement St					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	1!	0 0	0 0	1!	0 0	0 0	1!	0 0	0 0	1!	0 0
Volume Module:												
Base Vol:	12	14	18	34	71	104	75	235	17	17	214	16
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	12	14	18	34	71	104	75	235	17	17	214	16
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHF Volume:	13	16	20	38	79	116	83	261	19	19	238	18
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	13	16	20	38	79	116	83	261	19	19	238	18
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	13	16	20	38	79	116	83	261	19	19	238	18
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.27	0.32	0.41	0.16	0.34	0.50	0.23	0.72	0.05	0.07	0.87	0.06
Final Sat.:	151	176	226	103	216	316	159	497	36	46	584	44
Capacity Analysis Module:												
Vol/Sat:	0.09	0.09	0.09	0.37	0.37	0.37	0.53	0.53	0.53	0.41	0.41	0.41
Crit Moves:		****		****				****		****		
Delay/Veh:	9.1	9.1	9.1	10.9	10.9	10.9	13.1	13.1	13.1	11.3	11.3	11.3
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	9.1	9.1	9.1	10.9	10.9	10.9	13.1	13.1	13.1	11.3	11.3	11.3
LOS by Move:	A	A	A	B	B	B	B	B	B	B	B	B
ApproachDel:		9.1			10.9			13.1			11.3	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		9.1			10.9			13.1			11.3	
LOS by Appr:		A			B			B			B	
AllWayAvgQ:	0.1	0.1	0.1	0.5	0.5	0.5	1.0	1.0	1.0	0.6	0.6	0.6

Note: Queue reported is the number of cars per lane.

```
------------------------------------------------------------------------------
                                  SFVAMC
                           Existing No Project
                               PM Peak Hour
------------------------------------------------------------------------------
                     Level Of Service Computation Report
             2000 HCM 4-Way Stop Method (Base Volume Alternative)
******************************************************************************
Intersection #2 42nd Ave / Clement St
******************************************************************************
Cycle (sec):          100              Critical Vol./Cap.(X):         0.438
Loss Time (sec):        0              Average Delay (sec/veh):        11.0
Optimal Cycle:          0              Level Of Service:                  B
******************************************************************************
Street Name:                42nd Ave                         Clement St
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Min. Green:    0    0     0    0    0     0    0    0     0    0    0     0
Lanes:       0  0  1! 0  0   0  0  1! 0  0   0  0  1! 0  0   0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      5   45    23   86   77    36   17  246     5   26  161    51
Growth Adj:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Initial Bse:   5   45    23   86   77    36   17  246     5   26  161    51
User Adj:    1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Adj:     0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90  0.90
PHF Volume:    6   50    26   96   86    40   19  273     6   29  179    57
Reduct Vol:    0    0     0    0    0     0    0    0     0    0    0     0
Reduced Vol:   6   50    26   96   86    40   19  273     6   29  179    57
PCE Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
FinalVolume:   6   50    26   96   86    40   19  273     6   29  179    57
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Lanes:       0.07 0.62  0.31 0.43 0.39  0.18 0.06 0.92  0.02 0.11 0.68  0.21
Final Sat.:   40  361   185  270  242   113   43  624    13   75  463   147
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.14 0.14  0.14 0.35 0.35  0.35 0.44 0.44  0.44 0.39 0.39  0.39
Crit Moves:       ****       ****                  ****                  ****
Delay/Veh:    9.2  9.2   9.2 11.0 11.0  11.0 11.7 11.7  11.7 10.9 10.9  10.9
Delay Adj:   1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
AdjDel/Veh:   9.2  9.2   9.2 11.0 11.0  11.0 11.7 11.7  11.7 10.9 10.9  10.9
LOS by Move:    A    A     A    B    B     B    B    B     B    B    B     B
ApproachDel:        9.2             11.0             11.7             10.9
Delay Adj:         1.00             1.00             1.00             1.00
ApprAdjDel:         9.2             11.0             11.7             10.9
LOS by Appr:          A                B                B                B
AllWayAvgQ:   0.1  0.1   0.1  0.5  0.5   0.5  0.7  0.7   0.7  0.5  0.5   0.5
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```



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------------------------------------------------------------------------------
                                  SFVAMC
                           Existing No Project
                               PM Peak Hour
------------------------------------------------------------------------------
                     Level Of Service Computation Report
             2000 HCM 4-Way Stop Method (Base Volume Alternative)
******************************************************************************
Intersection #3 43rd Avenue / Clement Street
******************************************************************************
Cycle (sec):          100              Critical Vol./Cap.(X):         0.550
Loss Time (sec):        0              Average Delay (sec/veh):        11.7
Optimal Cycle:          0              Level Of Service:                  B
******************************************************************************
Street Name:                43rd Ave                         Clement St
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Min. Green:    0    0     0    0    0     0    0    0     0    0    0     0
Lanes:       0  0  1! 0  0   0  0  1! 0  0   0  0  1! 0  0   0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      7    7    51   78  217    50    4  138    10   59  139     3
Growth Adj:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Initial Bse:   7    7    51   78  217    50    4  138    10   59  139     3
User Adj:    1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Adj:     0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90  0.90
PHF Volume:    8    8    57   87  241    56    4  153    11   66  154     3
Reduct Vol:    0    0     0    0    0     0    0    0     0    0    0     0
Reduced Vol:   8    8    57   87  241    56    4  153    11   66  154     3
PCE Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
FinalVolume:   8    8    57   87  241    56    4  153    11   66  154     3
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Lanes:       0.11 0.11  0.78 0.23 0.63  0.14 0.03 0.91  0.06 0.29 0.70  0.01
Final Sat.:   69   69   506  158  438   101   16  568    41  186  438     9
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.11 0.11  0.11 0.55 0.55  0.55 0.27 0.27  0.27 0.35 0.35  0.35
Crit Moves:       ****       ****                  ****                  ****
Delay/Veh:    8.6  8.6   8.6 13.4 13.4  13.4 10.1 10.1  10.1 10.9 10.9  10.9
Delay Adj:   1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
AdjDel/Veh:   8.6  8.6   8.6 13.4 13.4  13.4 10.1 10.1  10.1 10.9 10.9  10.9
LOS by Move:    A    A     A    B    B     B    B    B     B    B    B     B
ApproachDel:        8.6             13.4             10.1             10.9
Delay Adj:         1.00             1.00             1.00             1.00
ApprAdjDel:         8.6             13.4             10.1             10.9
LOS by Appr:          A                B                B                B
AllWayAvgQ:   0.1  0.1   0.1  1.1  1.1   1.1  0.3  0.3   0.3  0.5  0.5   0.5
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
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--------------------------------------------------------------------------------
                                  SFVAMC
                           Existing No Project
                               PM Peak Hour
--------------------------------------------------------------------------------
                    Level Of Service Computation Report
          2000 HCM 4-Way Stop Method (Base Volume Alternative)
********************************************************************************
Intersection #4 42nd Ave / Point Lobos Ave
********************************************************************************
Cycle (sec):          100              Critical Vol./Cap.(X):         0.571
Loss Time (sec):        0              Average Delay (sec/veh):        12.4
Optimal Cycle:          0              Level Of Service:                  B
********************************************************************************
Street Name:                  42nd Ave                     Point Lobos Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:         Include          Include          Include          Include
Min. Green:    0    0    0     0    0    0     0    0    0     0    0    0
Lanes:       0  0  1! 0  0   0  0  1! 0  0   0  0  1! 0  0   0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       5   10    2     23   50   24     27  270   45     25  344   20
Growth Adj:  1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
Initial Bse:    5   10    2     23   50   24     27  270   45     25  344   20
User Adj:    1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
PHF Adj:     0.90 0.90 0.90   0.90 0.90 0.90   0.90 0.90 0.90   0.90 0.90 0.90
PHF Volume:     6   11    2     26   56   27     30  300   50     28  382   22
Reduct Vol:     0    0    0      0    0    0      0    0    0      0    0    0
Reduced Vol:    6   11    2     26   56   27     30  300   50     28  382   22
PCE Adj:     1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
MLF Adj:     1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
FinalVolume:    6   11    2     26   56   27     30  300   50     28  382   22
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
Lanes:       0.29 0.59 0.12   0.24 0.51 0.25   0.08 0.79 0.13   0.06 0.89 0.05
Final Sat.:   155  311   62    137  299  143     59  593   99     49  669   39
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.04 0.04 0.04   0.19 0.19 0.19   0.51 0.51 0.51   0.57 0.57 0.57
Crit Moves:       ****             ****        ****                        ****
Delay/Veh:    9.0  9.0  9.0    9.7  9.7  9.7   12.2 12.2 12.2   13.4 13.4 13.4
Delay Adj:   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
AdjDel/Veh:   9.0  9.0  9.0    9.7  9.7  9.7   12.2 12.2 12.2   13.4 13.4 13.4
LOS by Move:    A    A    A      A    A    A      B    B    B      B    B    B
ApproachDel:       9.0              9.7             12.2             13.4
Delay Adj:        1.00             1.00             1.00             1.00
ApprAdjDel:        9.0              9.7             12.2             13.4
LOS by Appr:        A                A                B                B
AllWayAvgQ:   0.0  0.0  0.0    0.2  0.2  0.2    0.9  0.9  0.9    1.2  1.2  1.2
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```



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--------------------------------------------------------------------------------
                                  SFVAMC
                           Existing No Project
                               PM Peak Hour
--------------------------------------------------------------------------------
                    Level Of Service Computation Report
          2000 HCM 4-Way Stop Method (Base Volume Alternative)
********************************************************************************
Intersection #5 43rd Ave / Point Lobos Ave
********************************************************************************
Cycle (sec):          100              Critical Vol./Cap.(X):         0.617
Loss Time (sec):        0              Average Delay (sec/veh):        14.2
Optimal Cycle:          0              Level Of Service:                  B
********************************************************************************
Street Name:                  43rd Ave                     Point Lobos Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:         Include          Include          Include          Include
Min. Green:    0    0    0     0    0    0     0    0    0     0    0    0
Lanes:       0  0  1! 0  0   0  0  1! 0  0   0  0  1! 0  0   0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      14   35   54     44  148   73     29  221   11     36  300    9
Growth Adj:  1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
Initial Bse:   14   35   54     44  148   73     29  221   11     36  300    9
User Adj:    1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
PHF Adj:     0.90 0.90 0.90   0.90 0.90 0.90   0.90 0.90 0.90   0.90 0.90 0.90
PHF Volume:    16   39   60     49  164   81     32  246   12     40  333   10
Reduct Vol:     0    0    0      0    0    0      0    0    0      0    0    0
Reduced Vol:   16   39   60     49  164   81     32  246   12     40  333   10
PCE Adj:     1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
MLF Adj:     1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
FinalVolume:   16   39   60     49  164   81     32  246   12     40  333   10
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
Lanes:       0.14 0.34 0.52   0.17 0.56 0.27   0.11 0.85 0.04   0.10 0.87 0.03
Final Sat.:    70  175  271     96  325  160     66  505   25     65  541   16
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.22 0.22 0.22   0.51 0.51 0.51   0.49 0.49 0.49   0.62 0.62 0.62
Crit Moves:            ****             ****        ****        ****
Delay/Veh:   10.4 10.4 10.4   13.8 13.8 13.8   13.4 13.4 13.4   16.2 16.2 16.2
Delay Adj:   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
AdjDel/Veh:  10.4 10.4 10.4   13.8 13.8 13.8   13.4 13.4 13.4   16.2 16.2 16.2
LOS by Move:    B    B    B      B    B    B      B    B    B      C    C    C
ApproachDel:      10.4             13.8             13.4             16.2
Delay Adj:        1.00             1.00             1.00             1.00
ApprAdjDel:       10.4             13.8             13.4             16.2
LOS by Appr:        B                B                B                C
AllWayAvgQ:   0.2  0.2  0.2    0.8  0.8  0.8    0.8  0.8  0.8    1.3  1.3  1.3
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
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SFVAMC
2020 No Project
PM Peak Hour

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/Veh	Base V/C	Future LOS	Future Del/Veh	Future V/C	Change in
# 1 34th Ave / Clement St	B	12.4	0.558	B	12.4	0.558	+ 0.000 V/C
# 2 42nd Ave / Clement St	B	11.4	0.464	B	11.4	0.464	+ 0.000 V/C
# 3 43rd Avenue / Clement Street	B	12.3	0.582	B	12.3	0.582	+ 0.000 V/C
# 4 42nd Ave / Point Lobos Ave	B	13.1	0.603	B	13.1	0.603	+ 0.000 V/C
# 5 43rd Ave / Point Lobos Ave	C	15.1	0.655	C	15.1	0.655	+ 0.000 V/C

SFVAMC
2020 No Project
PM Peak Hour

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #1 34th Ave / Clement St

Cycle (sec):	100	Critical Vol./Cap.(X):	0.558
Loss Time (sec):	0	Average Delay (sec/veh):	12.4
Optimal Cycle:	0	Level Of Service:	B

Street Name: 34th Ave / Clement St

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:		Stop Sign			Stop Sign			Stop Sign			Stop Sign	
Rights:		Include			Include			Include			Include	
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:		0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0	
Volume Module:												
Base Vol:	13	15	19	36	74	109	78	246	18	18	224	17
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	13	15	19	36	74	109	78	246	18	18	224	17
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHF Volume:	14	17	21	40	82	121	87	273	20	20	249	19
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	14	17	21	40	82	121	87	273	20	20	249	19
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	14	17	21	40	82	121	87	273	20	20	249	19
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.28	0.32	0.40	0.16	0.34	0.50	0.23	0.72	0.05	0.07	0.86	0.07
Final Sat.:	148	171	216	103	211	311	155	489	36	46	573	43
Capacity Analysis Module:												
Vol/Sat:	0.10	0.10	0.10	0.39	0.39	0.39	0.56	0.56	0.56	0.43	0.43	0.43
Crit Moves:		****			****		****			****		
Delay/Veh:	9.3	9.3	9.3	11.3	11.3	11.3	13.9	13.9	13.9	11.8	11.8	11.8
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	9.3	9.3	9.3	11.3	11.3	11.3	13.9	13.9	13.9	11.8	11.8	11.8
LOS by Move:	A	A	A	B	B	B	B	B	B	B	B	B
ApproachDel:		9.3			11.3			13.9			11.8	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		9.3			11.3			13.9			11.8	
LOS by Appr:		A			B			B			B	
AllWayAvgQ:	0.1	0.1	0.1	0.5	0.5	0.5	1.1	1.1	1.1	0.7	0.7	0.7

Note: Queue reported is the number of cars per lane.

SFVAMC
2020 No Project
PM Peak Hour

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #2 42nd Ave / Clement St

Cycle (sec):	100	Critical Vol./Cap.(X):	0.464
Loss Time (sec):	0	Average Delay (sec/veh):	11.4
Optimal Cycle:	0	Level Of Service:	B

Street Name:		42nd Ave						Clement St				
Approach:		North Bound			South Bound			East Bound			West Bound	
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:		Stop Sign			Stop Sign			Stop Sign			Stop Sign	
Rights:		Include			Include			Include			Include	
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:		0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0	
Volume Module:												
Base Vol:	5	47	24	90	81	38	18	257	5	27	168	53
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	5	47	24	90	81	38	18	257	5	27	168	53
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHF Volume:	6	52	27	100	90	42	20	286	6	30	187	59
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	6	52	27	100	90	42	20	286	6	30	187	59
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	6	52	27	100	90	42	20	286	6	30	187	59
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.06	0.62	0.32	0.43	0.39	0.18	0.06	0.92	0.02	0.11	0.68	0.21
Final Sat.:	38	353	180	265	238	112	43	615	12	73	456	144
Capacity Analysis Module:												
Vol/Sat:	0.15	0.15	0.15	0.38	0.38	0.38	0.46	0.46	0.46	0.41	0.41	0.41
Crit Moves:		****		****				****		****		
Delay/Veh:	9.4	9.4	9.4	11.4	11.4	11.4	12.2	12.2	12.2	11.3	11.3	11.3
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	9.4	9.4	9.4	11.4	11.4	11.4	12.2	12.2	12.2	11.3	11.3	11.3
LOS by Move:	A	A	A	B	B	B	B	B	B	B	B	B
ApproachDel:		9.4			11.4			12.2			11.3	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		9.4			11.4			12.2			11.3	
LOS by Appr:		A			B			B			B	
AllWayAvgQ:	0.1	0.1	0.1	0.5	0.5	0.5	0.8	0.8	0.8	0.6	0.6	0.6

Note: Queue reported is the number of cars per lane.

SFVAMC
2020 No Project
PM Peak Hour

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #3 43rd Avenue / Clement Street

Cycle (sec):	100	Critical Vol./Cap.(X):	0.582
Loss Time (sec):	0	Average Delay (sec/veh):	12.3
Optimal Cycle:	0	Level Of Service:	B

Street Name:		43rd Ave						Clement St				
Approach:		North Bound			South Bound			East Bound			West Bound	
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:		Stop Sign			Stop Sign			Stop Sign			Stop Sign	
Rights:		Include			Include			Include			Include	
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:		0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0	
Volume Module:												
Base Vol:	7	7	53	82	227	52	4	144	10	62	145	3
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	7	7	53	82	227	52	4	144	10	62	145	3
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHF Volume:	8	8	59	91	252	58	4	160	11	69	161	3
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	8	8	59	91	252	58	4	160	11	69	161	3
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	8	8	59	91	252	58	4	160	11	69	161	3
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.10	0.10	0.80	0.23	0.63	0.14	0.03	0.91	0.06	0.30	0.69	0.01
Final Sat.:	66	66	497	156	433	99	16	560	39	184	430	9
Capacity Analysis Module:												
Vol/Sat:	0.12	0.12	0.12	0.58	0.58	0.58	0.29	0.29	0.29	0.37	0.37	0.37
Crit Moves:		****			****			****			****	
Delay/Veh:	8.7	8.7	8.7	14.3	14.3	14.3	10.4	10.4	10.4	11.3	11.3	11.3
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	8.7	8.7	8.7	14.3	14.3	14.3	10.4	10.4	10.4	11.3	11.3	11.3
LOS by Move:	A	A	A	B	B	B	B	B	B	B	B	B
ApproachDel:		8.7			14.3			10.4			11.3	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		8.7			14.3			10.4			11.3	
LOS by Appr:		A			B			B			B	
AllWayAvgQ:	0.1	0.1	0.1	1.2	1.2	1.2	0.3	0.3	0.3	0.5	0.5	0.5

Note: Queue reported is the number of cars per lane.

SFVAMC
2020 No Project
PM Peak Hour

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #4 42nd Ave / Point Lobos Ave

Cycle (sec): 100 Critical Vol./Cap.(X): 0.603
Loss Time (sec): 0 Average Delay (sec/veh): 13.1
Optimal Cycle: 0 Level Of Service: B

Street Name:	42nd Ave						Point Lobos Ave					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:		Stop Sign			Stop Sign			Stop Sign			Stop Sign	
Rights:		Include			Include			Include			Include	
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:		0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0	
Volume Module:												
Base Vol:	5	10	2	24	52	25	28	282	47	26	360	21
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	5	10	2	24	52	25	28	282	47	26	360	21
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHF Volume:	6	11	2	27	58	28	31	313	52	29	400	23
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	6	11	2	27	58	28	31	313	52	29	400	23
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	6	11	2	27	58	28	31	313	52	29	400	23
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.29	0.59	0.12	0.24	0.51	0.25	0.08	0.79	0.13	0.06	0.89	0.05
Final Sat.:	152	303	61	135	293	141	58	588	98	48	663	39
Capacity Analysis Module:												
Vol/Sat:	0.04	0.04	0.04	0.20	0.20	0.20	0.53	0.53	0.53	0.60	0.60	0.60
Crit Moves:	****				****			****			****	
Delay/Veh:	9.2	9.2	9.2	9.9	9.9	9.9	12.7	12.7	12.7	14.3	14.3	14.3
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	9.2	9.2	9.2	9.9	9.9	9.9	12.7	12.7	12.7	14.3	14.3	14.3
LOS by Move:	A	A	A	A	A	A	B	B	B	B	B	B
ApproachDel:		9.2			9.9			12.7			14.3	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		9.2			9.9			12.7			14.3	
LOS by Appr:		A			A			B			B	
AllWayAvgQ:	0.0	0.0	0.0	0.2	0.2	0.2	1.0	1.0	1.0	1.4	1.4	1.4

Note: Queue reported is the number of cars per lane.

SFVAMC
2020 No Project
PM Peak Hour

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #5 43rd Ave / Point Lobos Ave

Cycle (sec): 100 Critical Vol./Cap.(X): 0.655
Loss Time (sec): 0 Average Delay (sec/veh): 15.1
Optimal Cycle: 0 Level Of Service: C

Street Name:	43rd Ave						Point Lobos Ave					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:		Stop Sign			Stop Sign			Stop Sign			Stop Sign	
Rights:		Include			Include			Include			Include	
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:		0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0	
Volume Module:												
Base Vol:	15	37	56	46	155	76	30	221	12	38	314	9
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	15	37	56	46	155	76	30	221	12	38	314	9
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHF Volume:	17	41	62	51	172	84	33	246	13	42	349	10
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	17	41	62	51	172	84	33	246	13	42	349	10
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	17	41	62	51	172	84	33	246	13	42	349	10
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.14	0.34	0.52	0.17	0.56	0.27	0.11	0.84	0.05	0.11	0.87	0.02
Final Sat.:	70	172	260	95	320	157	66	489	27	64	532	15
Capacity Analysis Module:												
Vol/Sat:	0.24	0.24	0.24	0.54	0.54	0.54	0.50	0.50	0.50	0.66	0.66	0.66
Crit Moves:		****			****			****			****	
Delay/Veh:	10.7	10.7	10.7	14.6	14.6	14.6	13.9	13.9	13.9	17.8	17.8	17.8
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	10.7	10.7	10.7	14.6	14.6	14.6	13.9	13.9	13.9	17.8	17.8	17.8
LOS by Move:	B	B	B	B	B	B	B	B	B	C	C	C
ApproachDel:		10.7			14.6			13.9			17.8	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		10.7			14.6			13.9			17.8	
LOS by Appr:		B			B			B			C	
AllWayAvgQ:	0.2	0.2	0.2	0.9	0.9	0.9	0.8	0.8	0.8	1.5	1.5	1.5

Note: Queue reported is the number of cars per lane.

SFVAMC
2020 + Phase 1 (Alt 1 +2)
PM Peak Hour

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/ Veh	Base V/ C	Future LOS	Future Del/ Veh	Future V/ C	Change in
# 1 34th Ave / Clement St	B	12.4	0.558	B	12.8	0.587	+ 0.028 V/C
# 2 42nd Ave / Clement St	B	11.4	0.464	B	11.8	0.496	+ 0.031 V/C
# 3 43rd Avenue / Clement Street	B	12.3	0.582	B	13.6	0.656	+ 0.074 V/C
# 4 42nd Ave / Point Lobos Ave	B	13.1	0.603	B	13.3	0.608	+ 0.005 V/C
# 5 43rd Ave / Point Lobos Ave	C	15.1	0.655	C	15.9	0.669	+ 0.014 V/C

SFVAMC
2020 + Phase 1 (Alt 1 +2)
PM Peak Hour

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #1 34th Ave / Clement St

Cycle (sec):	100	Critical Vol./Cap.(X):	0.587
Loss Time (sec):	0	Average Delay (sec/veh):	12.8
Optimal Cycle:	0	Level Of Service:	B

Street Name:	34th Ave						Clement St					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	1!	0 0	0 0	1!	0 0	0 0	1!	0 0	0 0	1!	0 0
Volume Module:												
Base Vol:	13	15	19	36	74	109	78	246	18	18	224	17
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	13	15	19	36	74	109	78	246	18	18	224	17
Added Vol:	0	0	0	0	0	0	0	17	0	0	3	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	13	15	19	36	74	109	78	263	18	18	227	17
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHF Volume:	14	17	21	40	82	121	87	292	20	20	252	19
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	14	17	21	40	82	121	87	292	20	20	252	19
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	14	17	21	40	82	121	87	292	20	20	252	19
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.28	0.32	0.40	0.16	0.34	0.50	0.22	0.73	0.05	0.07	0.87	0.06
Final Sat.:	146	168	213	101	208	306	148	498	34	45	570	43
Capacity Analysis Module:												
Vol/Sat:	0.10	0.10	0.10	0.40	0.40	0.40	0.59	0.59	0.59	0.44	0.44	0.44
Crit Moves:		****			****			****				****
Delay/Veh:	9.4	9.4	9.4	11.5	11.5	11.5	14.6	14.6	14.6	12.0	12.0	12.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	9.4	9.4	9.4	11.5	11.5	11.5	14.6	14.6	14.6	12.0	12.0	12.0
LOS by Move:	A	A	A	B	B	B	B	B	B	B	B	B
ApproachDel:		9.4			11.5			14.6			12.0	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		9.4			11.5			14.6			12.0	
LOS by Appr:		A			B			B			B	
AllWayAvgQ:	0.1	0.1	0.1	0.5	0.5	0.5	1.2	1.2	1.2	0.7	0.7	0.7

Note: Queue reported is the number of cars per lane.

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---------------------------------------------------------------------------------
                                     SFVAMC
                           2020 + Phase 1 (Alt 1 +2)
                                  PM Peak Hour
---------------------------------------------------------------------------------
                       Level Of Service Computation Report
            2000 HCM 4-Way Stop Method (Future Volume Alternative)
*********************************************************************************
Intersection #2 42nd Ave / Clement St
*********************************************************************************
Cycle (sec):          100              Critical Vol./Cap.(X):         0.496
Loss Time (sec):        0              Average Delay (sec/veh):        11.8
Optimal Cycle:          0              Level Of Service:                  B
*********************************************************************************
Street Name:                 42nd Ave                          Clement St
Approach:       North Bound      South Bound      East Bound       West Bound
Movement:      L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0    0    0     0    0    0     0    0    0     0
Lanes:         0  0  1! 0  0   0  0  1! 0  0   0  0  1! 0  0   0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       5   47    24   90   81    38   18  257     5   27  168    53
Growth Adj:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Initial Bse:    5   47    24   90   81    38   18  257     5   27  168    53
Added Vol:      0    3     0    2    3     1    1   15     0    0    1     2
PasserByVol:    0    0     0    0    0     0    0    0     0    0    0     0
Initial Fut:    5   50    24   92   84    39   19  272     5   27  169    55
User Adj:    1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Adj:     0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90  0.90
PHF Volume:     6   56    27  102   93    43   21  302     6   30  188    61
Reduct Vol:     0    0     0    0    0     0    0    0     0    0    0     0
Reduced Vol:    6   56    27  102   93    43   21  302     6   30  188    61
PCE Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
FinalVolume:    6   56    27  102   93    43   21  302     6   30  188    61
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Lanes:       0.06 0.64  0.30 0.43 0.39  0.18 0.06 0.92  0.02 0.11 0.67  0.22
Final Sat.:    35  354   170  259  237   110   43  610    11   71  446   145
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.16 0.16  0.16 0.39 0.39  0.39 0.50 0.50  0.50 0.42 0.42  0.42
Crit Moves:       ****              ****         ****                  ****
Delay/Veh:    9.6  9.6   9.6 11.7 11.7  11.7 12.8 12.8  12.8 11.5 11.5  11.5
Delay Adj:   1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
AdjDel/Veh:   9.6  9.6   9.6 11.7 11.7  11.7 12.8 12.8  12.8 11.5 11.5  11.5
LOS by Move:    A    A     A    B    B     B    B    B     B    B    B     B
ApproachDel:       9.6             11.7             12.8             11.5
Delay Adj:        1.00             1.00             1.00             1.00
ApprAdjDel:        9.6             11.7             12.8             11.5
LOS by Appr:         A                B                B                B
AllWayAvgQ:   0.1  0.1   0.1  0.5  0.5   0.5  0.8  0.8   0.8  0.6  0.6   0.6
*********************************************************************************
Note: Queue reported is the number of cars per lane.
*********************************************************************************
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---------------------------------------------------------------------------------
                                     SFVAMC
                           2020 + Phase 1 (Alt 1 +2)
                                  PM Peak Hour
---------------------------------------------------------------------------------
                       Level Of Service Computation Report
            2000 HCM 4-Way Stop Method (Future Volume Alternative)
*********************************************************************************
Intersection #3 43rd Avenue / Clement Street
*********************************************************************************
Cycle (sec):          100              Critical Vol./Cap.(X):         0.656
Loss Time (sec):        0              Average Delay (sec/veh):        13.6
Optimal Cycle:          0              Level Of Service:                  B
*********************************************************************************
Street Name:                 43rd Ave                          Clement St
Approach:       North Bound      South Bound      East Bound       West Bound
Movement:      L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0    0    0     0    0    0     0    0    0     0
Lanes:         0  0  1! 0  0   0  0  1! 0  0   0  0  1! 0  0   0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       7    7    53   82  227    52    4  144    10   62  145     3
Growth Adj:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Initial Bse:    7    7    53   82  227    52    4  144    10   62  145     3
Added Vol:      0    2     0   15   25     4    0    1     0    0    1     1
PasserByVol:    0    0     0    0    0     0    0    0     0    0    0     0
Initial Fut:    7    9    53   97  252    56    4  145    10   62  146     4
User Adj:    1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Adj:     0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90  0.90
PHF Volume:     8   10    59  108  280    62    4  161    11   69  162     4
Reduct Vol:     0    0     0    0    0     0    0    0     0    0    0     0
Reduced Vol:    8   10    59  108  280    62    4  161    11   69  162     4
PCE Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
FinalVolume:    8   10    59  108  280    62    4  161    11   69  162     4
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Lanes:       0.10 0.13  0.77 0.24 0.62  0.14 0.03 0.91  0.06 0.29 0.69  0.02
Final Sat.:    62   80   468  164  427    95   15  540    37  176  415    11
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.13 0.13  0.13 0.66 0.66  0.66 0.30 0.30  0.30 0.39 0.39  0.39
Crit Moves:             ****      ****              ****             ****
Delay/Veh:    8.9  8.9   8.9 16.6 16.6  16.6 10.7 10.7  10.7 11.7 11.7  11.7
Delay Adj:   1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
AdjDel/Veh:   8.9  8.9   8.9 16.6 16.6  16.6 10.7 10.7  10.7 11.7 11.7  11.7
LOS by Move:    A    A     A    C    C     C    B    B     B    B    B     B
ApproachDel:       8.9             16.6             10.7             11.7
Delay Adj:        1.00             1.00             1.00             1.00
ApprAdjDel:        8.9             16.6             10.7             11.7
LOS by Appr:         A                C                B                B
AllWayAvgQ:   0.1  0.1   0.1  1.6  1.6   1.6  0.3  0.3   0.3  0.5  0.5   0.5
*********************************************************************************
Note: Queue reported is the number of cars per lane.
*********************************************************************************
```

```
-------------------------------------------------------------------------------
                                    SFVAMC
                           2020 + Phase 1 (Alt 1 +2)
                                 PM Peak Hour
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
            2000 HCM 4-Way Stop Method (Future Volume Alternative)
*******************************************************************************
Intersection #4 42nd Ave / Point Lobos Ave
*******************************************************************************
Cycle (sec):          100                Critical Vol./Cap.(X):         0.608
Loss Time (sec):        0                Average Delay (sec/veh):        13.3
Optimal Cycle:          0                Level Of Service:                  B
*******************************************************************************
Street Name:                 42nd Ave                    Point Lobos Ave
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:         Include          Include          Include          Include
Min. Green:    0    0    0     0    0    0     0    0    0     0    0    0
Lanes:       0  0  1! 0  0   0  0  1! 0  0   0  0  1! 0  0   0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      5   10    2    24   52   25    28  282   47    26  360   21
Growth Adj:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse:   5   10    2    24   52   25    28  282   47    26  360   21
Added Vol:     0    2    0     1    2    0     0    7    0     0    0    1
PasserByVol:   0    0    0     0    0    0     0    0    0     0    0    0
Initial Fut:   5   12    2    25   54   25    28  289   47    26  360   22
User Adj:    1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Adj:     0.90 0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90
PHF Volume:    6   13    2    28   60   28    31  321   52    29  400   24
Reduct Vol:    0    0    0     0    0    0     0    0    0     0    0    0
Reduced Vol:   6   13    2    28   60   28    31  321   52    29  400   24
PCE Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
MLF Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
FinalVolume:   6   13    2    28   60   28    31  321   52    29  400   24
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Lanes:       0.26 0.63 0.11  0.24 0.52 0.24  0.08 0.79 0.13  0.06 0.89 0.05
Final Sat.:   135  323   54   136  294  136    57  588   96    47  657   40
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.04 0.04 0.04  0.20 0.20 0.20  0.55 0.55 0.55  0.61 0.61 0.61
Crit Moves:       ****       ****                  ****             ****
Delay/Veh:    9.2  9.2  9.2  10.0 10.0 10.0  13.1 13.1 13.1  14.5 14.5 14.5
Delay Adj:   1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
AdjDel/Veh:   9.2  9.2  9.2  10.0 10.0 10.0  13.1 13.1 13.1  14.5 14.5 14.5
LOS by Move:    A    A    A     A    A    A     B    B    B     B    B    B
ApproachDel:       9.2             10.0             13.1             14.5
Delay Adj:        1.00             1.00             1.00             1.00
ApprAdjDel:        9.2             10.0             13.1             14.5
LOS by Appr:         A                A                B                B
AllWayAvgQ:   0.0  0.0  0.0   0.2  0.2  0.2   1.1  1.1  1.1   1.4  1.4  1.4
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```



```
-------------------------------------------------------------------------------
                                    SFVAMC
                           2020 + Phase 1 (Alt 1 +2)
                                 PM Peak Hour
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
            2000 HCM 4-Way Stop Method (Future Volume Alternative)
*******************************************************************************
Intersection #5 43rd Ave / Point Lobos Ave
*******************************************************************************
Cycle (sec):          100                Critical Vol./Cap.(X):         0.669
Loss Time (sec):        0                Average Delay (sec/veh):        15.9
Optimal Cycle:          0                Level Of Service:                  C
*******************************************************************************
Street Name:                 43rd Ave                    Point Lobos Ave
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:         Include          Include          Include          Include
Min. Green:    0    0    0     0    0    0     0    0    0     0    0    0
Lanes:       0  0  1! 0  0   0  0  1! 0  0   0  0  1! 0  0   0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     15   37   56    46  155   76    30  221   12    38  314    9
Growth Adj:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse:  15   37   56    46  155   76    30  221   12    38  314    9
Added Vol:     0    1    0     7   18    0     0    0    0     0    0    0
PasserByVol:   0    0    0     0    0    0     0    0    0     0    0    0
Initial Fut:  15   38   56    53  173   76    30  221   12    38  314    9
User Adj:    1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Adj:     0.90 0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90
PHF Volume:   17   42   62    59  192   84    33  246   13    42  349   10
Reduct Vol:    0    0    0     0    0    0     0    0    0     0    0    0
Reduced Vol:  17   42   62    59  192   84    33  246   13    42  349   10
PCE Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
MLF Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
FinalVolume:  17   42   62    59  192   84    33  246   13    42  349   10
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Lanes:       0.14 0.35 0.51  0.18 0.57 0.25  0.11 0.84 0.05  0.11 0.87 0.02
Final Sat.:    67  170  251   100  327  143    65  477   26    63  521   15
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.25 0.25 0.25  0.59 0.59 0.59  0.51 0.51 0.51  0.67 0.67 0.67
Crit Moves:       ****            ****             ****             ****
Delay/Veh:   10.9 10.9 10.9  16.0 16.0 16.0  14.4 14.4 14.4  18.6 18.6 18.6
Delay Adj:   1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
AdjDel/Veh:  10.9 10.9 10.9  16.0 16.0 16.0  14.4 14.4 14.4  18.6 18.6 18.6
LOS by Move:    B    B    B     C    C    C     B    B    B     C    C    C
ApproachDel:      10.9             16.0             14.4             18.6
Delay Adj:        1.00             1.00             1.00             1.00
ApprAdjDel:       10.9             16.0             14.4             18.6
LOS by Appr:         B                C                B                C
AllWayAvgQ:   0.2  0.2  0.2   1.1  1.1  1.1   0.9  0.9  0.9   1.6  1.6  1.6
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

SFVAMC
2027 No Project
PM Peak Hour

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/Veh	Base V/C	Future LOS	Future Del/Veh	Future V/C	Change in
# 1 34th Ave / Clement St	B	12.9	0.583	B	12.9	0.583	+ 0.000 V/C
# 2 42nd Ave / Clement St	B	11.8	0.485	B	11.8	0.485	+ 0.000 V/C
# 3 43rd Avenue / Clement Street	B	12.8	0.609	B	12.8	0.609	+ 0.000 V/C
# 4 42nd Ave / Point Lobos Ave	B	13.7	0.631	B	13.7	0.631	+ 0.000 V/C
# 5 43rd Ave / Point Lobos Ave	C	16.2	0.689	C	16.2	0.689	+ 0.000 V/C

SFVAMC
2027 No Project
PM Peak Hour

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #1 34th Ave / Clement St

Cycle (sec):	100	Critical Vol./Cap.(X):	0.583
Loss Time (sec):	0	Average Delay (sec/veh):	12.9
Optimal Cycle:	0	Level Of Service:	B

Street Name:	34th Ave						Clement St					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	1!	0 0	0 0	1!	0 0	0 0	1!	0 0	0 0	1!	0 0
Volume Module:												
Base Vol:	13	15	19	37	77	113	81	255	18	18	232	17
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	13	15	19	37	77	113	81	255	18	18	232	17
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHF Volume:	14	17	21	41	86	126	90	283	20	20	258	19
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	14	17	21	41	86	126	90	283	20	20	258	19
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	14	17	21	41	86	126	90	283	20	20	258	19
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.28	0.32	0.40	0.16	0.34	0.50	0.23	0.72	0.05	0.07	0.87	0.06
Final Sat.:	144	167	211	100	209	307	154	486	34	44	569	42
Capacity Analysis Module:												
Vol/Sat:	0.10	0.10	0.10	0.41	0.41	0.41	0.58	0.58	0.58	0.45	0.45	0.45
Crit Moves:		****			****			****			****	
Delay/Veh:	9.4	9.4	9.4	11.7	11.7	11.7	14.6	14.6	14.6	12.2	12.2	12.2
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	9.4	9.4	9.4	11.7	11.7	11.7	14.6	14.6	14.6	12.2	12.2	12.2
LOS by Move:	A	A	A	B	B	B	B	B	B	B	B	B
ApproachDel:		9.4			11.7			14.6			12.2	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		9.4			11.7			14.6			12.2	
LOS by Appr:		A			B			B			B	
AllWayAvgQ:	0.1	0.1	0.1	0.6	0.6	0.6	1.2	1.2	1.2	0.7	0.7	0.7

Note: Queue reported is the number of cars per lane.

```
                                SFVAMC
                            2027 No Project
                             PM Peak Hour
---------------------------------------------------------------------------------
                     Level Of Service Computation Report
          2000 HCM 4-Way Stop Method (Base Volume Alternative)
*********************************************************************************
Intersection #2 42nd Ave / Clement St
*********************************************************************************
Cycle (sec):          100              Critical Vol./Cap.(X):         0.485
Loss Time (sec):        0              Average Delay (sec/veh):        11.8
Optimal Cycle:          0              Level Of Service:                  B
*********************************************************************************
Street Name:                 42nd Ave                         Clement St
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Min. Green:     0    0    0     0    0    0     0    0    0     0    0    0
Lanes:        0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       5   49    25     93   83    39     18  266     5     28  174    55
Growth Adj:  1.00 1.00  1.00   1.00 1.00  1.00   1.00 1.00  1.00   1.00 1.00  1.00
Initial Bse:    5   49    25     93   83    39     18  266     5     28  174    55
User Adj:    1.00 1.00  1.00   1.00 1.00  1.00   1.00 1.00  1.00   1.00 1.00  1.00
PHF Adj:     0.90 0.90  0.90   0.90 0.90  0.90   0.90 0.90  0.90   0.90 0.90  0.90
PHF Volume:     6   54    28    103   92    43     20  296     6     31  193    61
Reduct Vol:     0    0     0      0    0     0      0    0     0      0    0     0
Reduced Vol:    6   54    28    103   92    43     20  296     6     31  193    61
PCE Adj:     1.00 1.00  1.00   1.00 1.00  1.00   1.00 1.00  1.00   1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00   1.00 1.00  1.00   1.00 1.00  1.00   1.00 1.00  1.00
FinalVolume:    6   54    28    103   92    43     20  296     6     31  193    61
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00  1.00   1.00 1.00  1.00   1.00 1.00  1.00   1.00 1.00  1.00
Lanes:       0.06 0.62  0.32   0.43 0.39  0.18   0.06 0.92  0.02   0.11 0.68  0.21
Final Sat.:    35  347   177    262  234   110     41  609    11     72  450   142
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.16 0.16  0.16   0.39 0.39  0.39   0.49 0.49  0.49   0.43 0.43  0.43
Crit Moves:  ****                   ****                    ****              ****
Delay/Veh:    9.5  9.5   9.5   11.7 11.7  11.7   12.6 12.6  12.6   11.6 11.6  11.6
Delay Adj:   1.00 1.00  1.00   1.00 1.00  1.00   1.00 1.00  1.00   1.00 1.00  1.00
AdjDel/Veh:   9.5  9.5   9.5   11.7 11.7  11.7   12.6 12.6  12.6   11.6 11.6  11.6
LOS by Move:    A    A     A      B    B     B      B    B     B      B    B     B
ApproachDel:       9.5              11.7              12.6              11.6
Delay Adj:        1.00              1.00              1.00              1.00
ApprAdjDel:        9.5              11.7              12.6              11.6
LOS by Appr:         A                 B                 B                 B
AllWayAvgQ:   0.1  0.1   0.1    0.5  0.5   0.5    0.8  0.8   0.8    0.6  0.6   0.6
*********************************************************************************
Note: Queue reported is the number of cars per lane.
*********************************************************************************
```



```
                                SFVAMC
                            2027 No Project
                             PM Peak Hour
---------------------------------------------------------------------------------
                     Level Of Service Computation Report
          2000 HCM 4-Way Stop Method (Base Volume Alternative)
*********************************************************************************
Intersection #3 43rd Avenue / Clement Street
*********************************************************************************
Cycle (sec):          100              Critical Vol./Cap.(X):         0.609
Loss Time (sec):        0              Average Delay (sec/veh):        12.8
Optimal Cycle:          0              Level Of Service:                  B
*********************************************************************************
Street Name:                 43rd Ave                         Clement St
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Min. Green:     0    0    0     0    0    0     0    0    0     0    0    0
Lanes:        0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       8    8    55     84  235    54      4  149    11     64  151     3
Growth Adj:  1.00 1.00  1.00   1.00 1.00  1.00   1.00 1.00  1.00   1.00 1.00  1.00
Initial Bse:    8    8    55     84  235    54      4  149    11     64  151     3
User Adj:    1.00 1.00  1.00   1.00 1.00  1.00   1.00 1.00  1.00   1.00 1.00  1.00
PHF Adj:     0.90 0.90  0.90   0.90 0.90  0.90   0.90 0.90  0.90   0.90 0.90  0.90
PHF Volume:     9    9    61     93  261    60      4  166    12     71  168     3
Reduct Vol:     0    0     0      0    0     0      0    0     0      0    0     0
Reduced Vol:    9    9    61     93  261    60      4  166    12     71  168     3
PCE Adj:     1.00 1.00  1.00   1.00 1.00  1.00   1.00 1.00  1.00   1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00   1.00 1.00  1.00   1.00 1.00  1.00   1.00 1.00  1.00
FinalVolume:    9    9    61     93  261    60      4  166    12     71  168     3
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00  1.00   1.00 1.00  1.00   1.00 1.00  1.00   1.00 1.00  1.00
Lanes:       0.11 0.11  0.78   0.23 0.63  0.14   0.02 0.91  0.07   0.29 0.70  0.01
Final Sat.:    69   69   476    153  429    98     15  549    41    180  425     8
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.13 0.13  0.13   0.61 0.61  0.61   0.30 0.30  0.30   0.39 0.39  0.39
Crit Moves:  ****                   ****              ****              ****
Delay/Veh:    8.9  8.9   8.9   15.1 15.1  15.1   10.6 10.6  10.6   11.7 11.7  11.7
Delay Adj:   1.00 1.00  1.00   1.00 1.00  1.00   1.00 1.00  1.00   1.00 1.00  1.00
AdjDel/Veh:   8.9  8.9   8.9   15.1 15.1  15.1   10.6 10.6  10.6   11.7 11.7  11.7
LOS by Move:    A    A     A      C    C     C      B    B     B      B    B     B
ApproachDel:       8.9              15.1              10.6              11.7
Delay Adj:        1.00              1.00              1.00              1.00
ApprAdjDel:        8.9              15.1              10.6              11.7
LOS by Appr:         A                 C                 B                 B
AllWayAvgQ:   0.1  0.1   0.1    1.3  1.3   1.3    0.4  0.4   0.4    0.5  0.5   0.5
*********************************************************************************
Note: Queue reported is the number of cars per lane.
*********************************************************************************
```

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-----------------------------------------------------------------------------
                                   SFVAMC
                               2027 No Project
                                PM Peak Hour
-----------------------------------------------------------------------------
                      Level Of Service Computation Report
            2000 HCM 4-Way Stop Method (Base Volume Alternative)
*****************************************************************************
Intersection #4 42nd Ave / Point Lobos Ave
*****************************************************************************
Cycle (sec):          100              Critical Vol./Cap.(X):         0.631
Loss Time (sec):        0              Average Delay (sec/veh):        13.7
Optimal Cycle:          0              Level Of Service:                  B
*****************************************************************************
Street Name:                  42nd Ave                    Point Lobos Ave
Approach:       North Bound      South Bound      East Bound       West Bound
Movement:      L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Min. Green:     0    0    0     0    0    0     0    0    0     0    0    0
Lanes:         0  0  1! 0  0   0  0  1! 0  0   0  0  1! 0  0   0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       5   11    2    25   54   26    29  292   49    27  373   22
Growth Adj:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse:    5   11    2    25   54   26    29  292   49    27  373   22
User Adj:    1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Adj:     0.90 0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90
PHF Volume:     6   12    2    28   60   29    32  324   54    30  414   24
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
Reduced Vol:    6   12    2    28   60   29    32  324   54    30  414   24
PCE Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
MLF Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
FinalVolume:    6   12    2    28   60   29    32  324   54    30  414   24
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Lanes:       0.28 0.61 0.11  0.24 0.51 0.25  0.08 0.79 0.13  0.06 0.89 0.05
Final Sat.:   140  308   56   134  289  139    58  583   98    48  657   39
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.04 0.04 0.04  0.21 0.21 0.21  0.56 0.56 0.56  0.63 0.63 0.63
Crit Moves:       ****                 ****        ****                   ****
Delay/Veh:    9.3  9.3  9.3  10.1 10.1 10.1  13.3 13.3 13.3  15.2 15.2 15.2
Delay Adj:   1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
AdjDel/Veh:   9.3  9.3  9.3  10.1 10.1 10.1  13.3 13.3 13.3  15.2 15.2 15.2
LOS by Move:    A    A    A     B    B    B     B    B    B     C    C    C
ApproachDel:       9.3             10.1             13.3             15.2
Delay Adj:        1.00             1.00             1.00             1.00
ApprAdjDel:        9.3             10.1             13.3             15.2
LOS by Appr:         A                B                B                C
AllWayAvgQ:   0.0  0.0  0.0   0.2  0.2  0.2   1.1  1.1  1.1   1.5  1.5  1.5
*****************************************************************************
Note: Queue reported is the number of cars per lane.
*****************************************************************************
```



```
-----------------------------------------------------------------------------
                                   SFVAMC
                               2027 No Project
                                PM Peak Hour
-----------------------------------------------------------------------------
                      Level Of Service Computation Report
            2000 HCM 4-Way Stop Method (Base Volume Alternative)
*****************************************************************************
Intersection #5 43rd Ave / Point Lobos Ave
*****************************************************************************
Cycle (sec):          100              Critical Vol./Cap.(X):         0.689
Loss Time (sec):        0              Average Delay (sec/veh):        16.2
Optimal Cycle:          0              Level Of Service:                  C
*****************************************************************************
Street Name:                  43rd Ave                    Point Lobos Ave
Approach:       North Bound      South Bound      East Bound       West Bound
Movement:      L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Min. Green:     0    0    0     0    0    0     0    0    0     0    0    0
Lanes:         0  0  1! 0  0   0  0  1! 0  0   0  0  1! 0  0   0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      15   38   58    48  160   79    31  229   12    39  325   10
Growth Adj:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse:   15   38   58    48  160   79    31  229   12    39  325   10
User Adj:    1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Adj:     0.90 0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90
PHF Volume:    17   42   64    53  178   88    34  254   13    43  361   11
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
Reduced Vol:   17   42   64    53  178   88    34  254   13    43  361   11
PCE Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
MLF Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
FinalVolume:   17   42   64    53  178   88    34  254   13    43  361   11
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Lanes:       0.14 0.34 0.52  0.17 0.56 0.27  0.11 0.85 0.04  0.10 0.87 0.03
Final Sat.:    66  166  253    94  314  155    65  480   25    63  524   16
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.25 0.25 0.25  0.57 0.57 0.57  0.53 0.53 0.53  0.69 0.69 0.69
Crit Moves:            ****        ****             ****                  ****
Delay/Veh:   11.0 11.0 11.0  15.5 15.5 15.5  14.7 14.7 14.7  19.4 19.4 19.4
Delay Adj:   1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
AdjDel/Veh:  11.0 11.0 11.0  15.5 15.5 15.5  14.7 14.7 14.7  19.4 19.4 19.4
LOS by Move:    B    B    B     C    C    C     B    B    B     C    C    C
ApproachDel:      11.0             15.5             14.7             19.4
Delay Adj:        1.00             1.00             1.00             1.00
ApprAdjDel:       11.0             15.5             14.7             19.4
LOS by Appr:         B                C                B                C
AllWayAvgQ:   0.2  0.2  0.2   1.0  1.0  1.0   0.9  0.9  0.9   1.8  1.8  1.8
*****************************************************************************
Note: Queue reported is the number of cars per lane.
*****************************************************************************
```

SFVAMC
2027 + Phase 1 and 2 - Alternative 1
PM Peak Hour

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/Veh	Base V/C	Future LOS	Future Del/Veh	Future V/C	Change in
# 1 34th Ave / Clement St	B	12.9	0.583	C	15.0	0.680	+ 0.097 V/C
# 2 42nd Ave / Clement St	B	11.8	0.485	C	15.1	0.608	+ 0.123 V/C
# 3 43rd Avenue / Clement Street	B	12.8	0.609	C	17.3	0.773	+ 0.164 V/C
# 4 42nd Ave / Point Lobos Ave	B	13.7	0.631	C	16.0	0.702	+ 0.071 V/C
# 5 43rd Ave / Point Lobos Ave	C	16.2	0.689	C	19.0	0.742	+ 0.052 V/C

SFVAMC
2027 + Phase 1 and 2 - Alternative 1
PM Peak Hour

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #1 34th Ave / Clement St

Cycle (sec):	100	Critical Vol./Cap.(X):	0.680
Loss Time (sec):	0	Average Delay (sec/veh):	15.0
Optimal Cycle:	0	Level Of Service:	C

Street Name:	34th Ave						Clement St					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:		Stop Sign			Stop Sign			Stop Sign			Stop Sign	
Rights:		Include			Include			Include			Include	
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:		0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0	
Volume Module:												
Base Vol:	13	15	19	37	77	113	81	255	18	18	232	17
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	13	15	19	37	77	113	81	255	18	18	232	17
Added Vol:	0	0	0	0	0	0	0	52	0	0	38	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	13	15	19	37	77	113	81	307	18	18	270	17
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHF Volume:	14	17	21	41	86	126	90	341	20	20	300	19
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	14	17	21	41	86	126	90	341	20	20	300	19
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	14	17	21	41	86	126	90	341	20	20	300	19
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.28	0.32	0.40	0.16	0.34	0.50	0.20	0.76	0.04	0.06	0.88	0.06
Final Sat.:	133	153	194	95	198	291	132	502	29	38	567	36
Capacity Analysis Module:												
Vol/Sat:	0.11	0.11	0.11	0.43	0.43	0.43	0.68	0.68	0.68	0.53	0.53	0.53
Crit Moves:		****			****			****			****	
Delay/Veh:	9.8	9.8	9.8	12.4	12.4	12.4	18.0	18.0	18.0	13.8	13.8	13.8
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	9.8	9.8	9.8	12.4	12.4	12.4	18.0	18.0	18.0	13.8	13.8	13.8
LOS by Move:	A	A	A	B	B	B	C	C	C	B	B	B
ApproachDel:		9.8			12.4			18.0			13.8	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		9.8			12.4			18.0			13.8	
LOS by Appr:		A			B			C			B	
AllWayAvgQ:	0.1	0.1	0.1	0.6	0.6	0.6	1.8	1.8	1.8	1.0	1.0	1.0

Note: Queue reported is the number of cars per lane.

SFVAMC
2027 + Phase 1 and 2 - Alternative 1
PM Peak Hour

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #2 42nd Ave / Clement St

Cycle (sec):	100	Critical Vol./Cap.(X):	0.608
Loss Time (sec):	0	Average Delay (sec/veh):	15.1
Optimal Cycle:	0	Level Of Service:	C

Street Name:	42nd Ave						Clement St					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	1!	0 0	0 0	1!	0 0	0 0	1!	0 0	0 0	1!	0 0
Volume Module:												
Base Vol:	5	49	25	93	83	39	18	266	5	28	174	55
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	5	49	25	93	83	39	18	266	5	28	174	55
Added Vol:	0	38	0	23	38	6	6	29	0	0	15	23
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	5	87	25	116	121	45	24	295	5	28	189	78
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHF Volume:	6	97	28	129	134	50	27	328	6	31	210	87
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	6	97	28	129	134	50	27	328	6	31	210	87
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	6	97	28	129	134	50	27	328	6	31	210	87
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.04	0.75	0.21	0.41	0.43	0.16	0.07	0.91	0.02	0.09	0.65	0.26
Final Sat.:	21	364	105	230	240	89	44	539	9	56	381	157
Capacity Analysis Module:												
Vol/Sat:	0.27	0.27	0.27	0.56	0.56	0.56	0.61	0.61	0.61	0.55	0.55	0.55
Crit Moves:			****		****			****			****	
Delay/Veh:	11.2	11.2	11.2	15.4	15.4	15.4	16.4	16.4	16.4	14.7	14.7	14.7
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	11.2	11.2	11.2	15.4	15.4	15.4	16.4	16.4	16.4	14.7	14.7	14.7
LOS by Move:	B	B	B	C	C	C	C	C	C	B	B	B
ApproachDel:		11.2			15.4			16.4			14.7	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		11.2			15.4			16.4			14.7	
LOS by Appr:		B			C			C			B	
AllWayAvgQ:	0.3	0.3	0.3	1.0	1.0	1.0	1.3	1.3	1.3	1.0	1.0	1.0

Note: Queue reported is the number of cars per lane.

SFVAMC
2027 + Phase 1 and 2 - Alternative 1
PM Peak Hour

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #3 43rd Avenue / Clement Street

Cycle (sec):	100	Critical Vol./Cap.(X):	0.773
Loss Time (sec):	0	Average Delay (sec/veh):	17.3
Optimal Cycle:	0	Level Of Service:	C

Street Name:	43rd Ave						Clement St					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	1!	0 0	0 0	1!	0 0	0 0	1!	0 0	0 0	1!	0 0
Volume Module:												
Base Vol:	8	8	55	84	235	54	4	149	11	64	151	3
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	8	8	55	84	235	54	4	149	11	64	151	3
Added Vol:	0	24	0	29	48	7	4	6	0	0	6	15
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	8	32	55	113	283	61	8	155	11	64	157	18
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHF Volume:	9	36	61	126	314	68	9	172	12	71	174	20
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	9	36	61	126	314	68	9	172	12	71	174	20
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	9	36	61	126	314	68	9	172	12	71	174	20
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.08	0.34	0.58	0.25	0.62	0.13	0.05	0.89	0.06	0.27	0.66	0.07
Final Sat.:	47	186	320	162	407	88	25	487	35	152	373	43
Capacity Analysis Module:												
Vol/Sat:	0.19	0.19	0.19	0.77	0.77	0.77	0.35	0.35	0.35	0.47	0.47	0.47
Crit Moves:			****			****		****		****		
Delay/Veh:	9.9	9.9	9.9	23.0	23.0	23.0	11.8	11.8	11.8	13.4	13.4	13.4
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	9.9	9.9	9.9	23.0	23.0	23.0	11.8	11.8	11.8	13.4	13.4	13.4
LOS by Move:	A	A	A	C	C	C	B	B	B	B	B	B
ApproachDel:		9.9			23.0			11.8			13.4	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		9.9			23.0			11.8			13.4	
LOS by Appr:		A			C			B			B	
AllWayAvgQ:	0.2	0.2	0.2	2.7	2.7	2.7	0.4	0.4	0.4	0.7	0.7	0.7

Note: Queue reported is the number of cars per lane.

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---------------------------------------------------------------------------
                                 SFVAMC
                  2027 + Phase 1 and 2 - Alternative 1
                              PM Peak Hour
---------------------------------------------------------------------------
                    Level Of Service Computation Report
          2000 HCM 4-Way Stop Method (Future Volume Alternative)
***************************************************************************
Intersection #4 42nd Ave / Point Lobos Ave
***************************************************************************
Cycle (sec):         100              Critical Vol./Cap.(X):        0.702
Loss Time (sec):       0              Average Delay (sec/veh):       16.0
Optimal Cycle:         0              Level Of Service:                 C
***************************************************************************
Street Name:                42nd Ave                   Point Lobos Ave
Approach:       North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0    0    0     0    0    0     0    0    0     0
Lanes:        0  0  1! 0  0   0  0  1! 0  0   0  0  1! 0  0   0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       5   11     2   25   54    26   29  292    49   27  373    22
Growth Adj:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Initial Bse:    5   11     2   25   54    26   29  292    49   27  373    22
Added Vol:      0   27     0   11   27     0    0   14     0    0    7    11
PasserByVol:    0    0     0    0    0     0    0    0     0    0    0     0
Initial Fut:    5   38     2   36   81    26   29  306    49   27  380    33
User Adj:    1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Adj:     0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90  0.90
PHF Volume:     6   42     2   40   90    29   32  340    54   30  422    37
Reduct Vol:     0    0     0    0    0     0    0    0     0    0    0     0
Reduced Vol:    6   42     2   40   90    29   32  340    54   30  422    37
PCE Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
FinalVolume:    6   42     2   40   90    29   32  340    54   30  422    37
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Lanes:       0.11 0.85  0.04 0.25 0.57  0.18 0.07 0.80  0.13 0.06 0.86  0.08
Final Sat.:    53  400    21  134  302    97   52  546    87   43  602    52
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.11 0.11  0.11 0.30 0.30  0.30 0.62 0.62  0.62 0.70 0.70  0.70
Crit Moves:       ****       ****                  ****             ****
Delay/Veh:   10.0 10.0  10.0 11.3 11.3  11.3 15.7 15.7  15.7 18.5 18.5  18.5
Delay Adj:   1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
AdjDel/Veh:  10.0 10.0  10.0 11.3 11.3  11.3 15.7 15.7  15.7 18.5 18.5  18.5
LOS by Move:    B    B     B    B    B     B    C    C     C    C    C     C
ApproachDel:      10.0             11.3             15.7             18.5
Delay Adj:        1.00             1.00             1.00             1.00
ApprAdjDel:       10.0             11.3             15.7             18.5
LOS by Appr:         B                B                C                C
AllWayAvgQ:    0.1  0.1   0.1  0.3  0.3   0.3  1.4  1.4   1.4  2.0  2.0   2.0
***************************************************************************
Note: Queue reported is the number of cars per lane.
***************************************************************************
```



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---------------------------------------------------------------------------
                                 SFVAMC
                  2027 + Phase 1 and 2 - Alternative 1
                              PM Peak Hour
---------------------------------------------------------------------------
                    Level Of Service Computation Report
          2000 HCM 4-Way Stop Method (Future Volume Alternative)
***************************************************************************
Intersection #5 43rd Ave / Point Lobos Ave
***************************************************************************
Cycle (sec):         100              Critical Vol./Cap.(X):        0.742
Loss Time (sec):       0              Average Delay (sec/veh):       19.0
Optimal Cycle:         0              Level Of Service:                 C
***************************************************************************
Street Name:                43rd Ave                   Point Lobos Ave
Approach:       North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0    0    0     0    0    0     0    0    0     0
Lanes:        0  0  1! 0  0   0  0  1! 0  0   0  0  1! 0  0   0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      15   38    58   48  160    79   31  229    12   39  325    10
Growth Adj:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Initial Bse:   15   38    58   48  160    79   31  229    12   39  325    10
Added Vol:      0   17     0   14   34     0    0    0     0    0    0     7
PasserByVol:    0    0     0    0    0     0    0    0     0    0    0     0
Initial Fut:   15   55    58   62  194    79   31  229    12   39  325    17
User Adj:    1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Adj:     0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90  0.90
PHF Volume:    17   61    64   69  216    88   34  254    13   43  361    19
Reduct Vol:     0    0     0    0    0     0    0    0     0    0    0     0
Reduced Vol:   17   61    64   69  216    88   34  254    13   43  361    19
PCE Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
FinalVolume:   17   61    64   69  216    88   34  254    13   43  361    19
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Lanes:       0.12 0.43  0.45 0.18 0.58  0.24 0.11 0.85  0.04 0.10 0.86  0.04
Final Sat.:    53  195   206  102  318   130   61  449    24   58  487    25
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.31 0.31  0.31 0.68 0.68  0.68 0.57 0.57  0.57 0.74 0.74  0.74
Crit Moves:       ****       ****                  ****             ****
Delay/Veh:   12.0 12.0  12.0 19.7 19.7  19.7 16.2 16.2  16.2 22.9 22.9  22.9
Delay Adj:   1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
AdjDel/Veh:  12.0 12.0  12.0 19.7 19.7  19.7 16.2 16.2  16.2 22.9 22.9  22.9
LOS by Move:    B    B     B    C    C     C    C    C     C    C    C     C
ApproachDel:      12.0             19.7             16.2             22.9
Delay Adj:        1.00             1.00             1.00             1.00
ApprAdjDel:       12.0             19.7             16.2             22.9
LOS by Appr:         B                C                C                C
AllWayAvgQ:    0.3  0.3   0.3  1.6  1.6   1.6  1.0  1.0   1.0  2.2  2.2   2.2
***************************************************************************
Note: Queue reported is the number of cars per lane.
***************************************************************************
```

SFVAMC
2027 + Phase 1 and 2 - Alternative 2
PM Peak Hour

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/ Veh	Base V/ C	Future LOS	Future Del/ Veh	Future V/ C	Change in
# 1 34th Ave / Clement St	B	12.9	0.583	B	13.3	0.612	+ 0.029 V/C
# 2 42nd Ave / Clement St	B	11.8	0.485	B	12.2	0.517	+ 0.031 V/C
# 3 43rd Avenue / Clement Street	B	12.8	0.609	B	14.3	0.684	+ 0.074 V/C
# 4 42nd Ave / Point Lobos Ave	B	13.7	0.631	B	14.0	0.636	+ 0.005 V/C
# 5 43rd Ave / Point Lobos Ave	C	16.2	0.689	C	17.1	0.705	+ 0.016 V/C

SFVAMC
2027 + Phase 1 and 2 - Alternative 2
PM Peak Hour

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #1 34th Ave / Clement St

Cycle (sec):	100	Critical Vol./Cap.(X):	0.612
Loss Time (sec):	0	Average Delay (sec/veh):	13.3
Optimal Cycle:	0	Level Of Service:	B

Street Name:	34th Ave						Clement St					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0		
Volume Module:												
Base Vol:	13	15	19	37	77	113	81	255	18	18	232	17
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	13	15	19	37	77	113	81	255	18	18	232	17
Added Vol:	0	0	0	0	0	0	0	17	0	0	3	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	13	15	19	37	77	113	81	272	18	18	235	17
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHF Volume:	14	17	21	41	86	126	90	302	20	20	261	19
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	14	17	21	41	86	126	90	302	20	20	261	19
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	14	17	21	41	86	126	90	302	20	20	261	19
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.28	0.32	0.40	0.16	0.34	0.50	0.22	0.73	0.05	0.07	0.87	0.06
Final Sat.:	142	164	207	99	206	303	147	494	33	43	565	41
Capacity Analysis Module:												
Vol/Sat:	0.10	0.10	0.10	0.41	0.41	0.41	0.61	0.61	0.61	0.46	0.46	0.46
Crit Moves:		****			****		****					****
Delay/Veh:	9.5	9.5	9.5	11.8	11.8	11.8	15.5	15.5	15.5	12.4	12.4	12.4
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	9.5	9.5	9.5	11.8	11.8	11.8	15.5	15.5	15.5	12.4	12.4	12.4
LOS by Move:	A	A	A	B	B	B	C	C	C	B	B	B
ApproachDel:		9.5			11.8			15.5			12.4	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		9.5			11.8			15.5			12.4	
LOS by Appr:		A			B			C			B	
AllWayAvgQ:	0.1	0.1	0.1	0.6	0.6	0.6	1.4	1.4	1.4	0.7	0.7	0.7

Note: Queue reported is the number of cars per lane.

```
---------------------------------------------------------------------------------
                                      SFVAMC
                        2027 + Phase 1 and 2 - Alternative 2
                                   PM Peak Hour
---------------------------------------------------------------------------------
                         Level Of Service Computation Report
             2000 HCM 4-Way Stop Method (Future Volume Alternative)
*********************************************************************************
Intersection #2 42nd Ave / Clement St
*********************************************************************************
Cycle (sec):          100                Critical Vol./Cap.(X):         0.517
Loss Time (sec):        0                Average Delay (sec/veh):        12.2
Optimal Cycle:          0                Level Of Service:                  B
*********************************************************************************
Street Name:                  42nd Ave                          Clement St
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:      L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Lanes:        0  0  1! 0  0   0  0  1! 0  0   0  0  1! 0  0   0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       5   49    25    93   83    39    18  266     5    28  174    55
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    5   49    25    93   83    39    18  266     5    28  174    55
Added Vol:      0    3     0     2    3     1     1   15     0     0    1     2
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    5   52    25    95   86    40    19  281     5    28  175    57
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:     6   58    28   106   96    44    21  312     6    31  194    63
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    6   58    28   106   96    44    21  312     6    31  194    63
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    6   58    28   106   96    44    21  312     6    31  194    63
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       0.06 0.64  0.30  0.43 0.39  0.18  0.06 0.92  0.02  0.11 0.67  0.22
Final Sat.:    33  347   167   257  232   108    41  604    11    70  440   143
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.17 0.17  0.17  0.41 0.41  0.41  0.52 0.52  0.52  0.44 0.44  0.44
Crit Moves:       ****        ****                   ****                   ****
Delay/Veh:    9.7  9.7   9.7  12.0 12.0  12.0  13.3 13.3  13.3  11.9 11.9  11.9
Delay Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   9.7  9.7   9.7  12.0 12.0  12.0  13.3 13.3  13.3  11.9 11.9  11.9
LOS by Move:    A    A     A     B    B     B     B    B     B     B    B     B
ApproachDel:       9.7             12.0             13.3             11.9
Delay Adj:        1.00             1.00             1.00             1.00
ApprAdjDel:        9.7             12.0             13.3             11.9
LOS by Appr:         A                B                B                B
AllWayAvgQ:   0.1  0.1   0.1   0.6  0.6   0.6   0.9  0.9   0.9   0.7  0.7   0.7
*********************************************************************************
Note: Queue reported is the number of cars per lane.
*********************************************************************************
```



```
---------------------------------------------------------------------------------
                                      SFVAMC
                        2027 + Phase 1 and 2 - Alternative 2
                                   PM Peak Hour
---------------------------------------------------------------------------------
                         Level Of Service Computation Report
             2000 HCM 4-Way Stop Method (Future Volume Alternative)
*********************************************************************************
Intersection #3 43rd Avenue / Clement Street
*********************************************************************************
Cycle (sec):          100                Critical Vol./Cap.(X):         0.684
Loss Time (sec):        0                Average Delay (sec/veh):        14.3
Optimal Cycle:          0                Level Of Service:                  B
*********************************************************************************
Street Name:                 43rd Ave                          Clement St
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:      L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Lanes:        0  0  1! 0  0   0  0  1! 0  0   0  0  1! 0  0   0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       8    8    55    84  235    54     4  149    11    64  151     3
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    8    8    55    84  235    54     4  149    11    64  151     3
Added Vol:      0    2     0    15   25     4     0    1     0     0    1     1
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    8   10    55    99  260    58     4  150    11    64  152     4
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:     9   11    61   110  289    64     4  167    12    71  169     4
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    9   11    61   110  289    64     4  167    12    71  169     4
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    9   11    61   110  289    64     4  167    12    71  169     4
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       0.11 0.14  0.75  0.24 0.62  0.14  0.02 0.91  0.07  0.29 0.69  0.02
Final Sat.:    65   81   448   161  423    94    14  530    39   173  411    11
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.14 0.14  0.14  0.68 0.68  0.68  0.31 0.31  0.31  0.41 0.41  0.41
Crit Moves:       ****              ****              ****              ****
Delay/Veh:    9.1  9.1   9.1  17.7 17.7  17.7  11.0 11.0  11.0  12.1 12.1  12.1
Delay Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   9.1  9.1   9.1  17.7 17.7  17.7  11.0 11.0  11.0  12.1 12.1  12.1
LOS by Move:    A    A     A     C    C     C     B    B     B     B    B     B
ApproachDel:       9.1             17.7             11.0             12.1
Delay Adj:        1.00             1.00             1.00             1.00
ApprAdjDel:        9.1             17.7             11.0             12.1
LOS by Appr:         A                C                B                B
AllWayAvgQ:   0.1  0.1   0.1   1.8  1.8   1.8   0.4  0.4   0.4   0.6  0.6   0.6
*********************************************************************************
Note: Queue reported is the number of cars per lane.
*********************************************************************************
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---------------------------------------------------------------------------------
                                      SFVAMC
                        2027 + Phase 1 and 2 - Alternative 2
                                    PM Peak Hour
---------------------------------------------------------------------------------
                          Level Of Service Computation Report
            2000 HCM 4-Way Stop Method (Future Volume Alternative)
*********************************************************************************
Intersection #4 42nd Ave / Point Lobos Ave
*********************************************************************************
Cycle (sec):          100              Critical Vol./Cap.(X):         0.636
Loss Time (sec):        0              Average Delay (sec/veh):        14.0
Optimal Cycle:          0              Level Of Service:                  B
*********************************************************************************
Street Name:                 42nd Ave                      Point Lobos Ave
Approach:       North Bound      South Bound       East Bound        West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign         Stop Sign         Stop Sign
Rights:           Include          Include           Include           Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Lanes:        0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       5   11     2    25   54    26    29  292    49    27  373    22
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    5   11     2    25   54    26    29  292    49    27  373    22
Added Vol:      0    2     0     1    2     0     0    7     0     0    0     1
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    5   13     2    26   56    26    29  299    49    27  373    23
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:     6   14     2    29   62    29    32  332    54    30  414    26
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    6   14     2    29   62    29    32  332    54    30  414    26
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    6   14     2    29   62    29    32  332    54    30  414    26
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       0.25 0.65  0.10  0.24 0.52  0.24  0.08 0.79  0.13  0.06 0.89  0.05
Final Sat.:   125  325    50   134  289   134    56  581    95    47  652    40
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.04 0.04  0.04  0.22 0.22  0.22  0.57 0.57  0.57  0.64 0.64  0.64
Crit Moves:       ****             ****             ****             ****
Delay/Veh:    9.3  9.3   9.3  10.2 10.2  10.2  13.7 13.7  13.7  15.4 15.4  15.4
Delay Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   9.3  9.3   9.3  10.2 10.2  10.2  13.7 13.7  13.7  15.4 15.4  15.4
LOS by Move:    A    A     A     B    B     B     B    B     B     C    C     C
ApproachDel:       9.3              10.2              13.7              15.4
Delay Adj:        1.00              1.00              1.00              1.00
ApprAdjDel:        9.3              10.2              13.7              15.4
LOS by Appr:         A                 B                 B                 C
AllWayAvgQ:   0.0  0.0   0.0   0.2  0.2   0.2   1.2  1.2   1.2   1.6  1.6   1.6
*********************************************************************************
Note: Queue reported is the number of cars per lane.
*********************************************************************************
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---------------------------------------------------------------------------------
                                      SFVAMC
                        2027 + Phase 1 and 2 - Alternative 2
                                    PM Peak Hour
---------------------------------------------------------------------------------
                          Level Of Service Computation Report
            2000 HCM 4-Way Stop Method (Future Volume Alternative)
*********************************************************************************
Intersection #5 43rd Ave / Point Lobos Ave
*********************************************************************************
Cycle (sec):          100              Critical Vol./Cap.(X):         0.705
Loss Time (sec):        0              Average Delay (sec/veh):        17.1
Optimal Cycle:          0              Level Of Service:                  C
*********************************************************************************
Street Name:                 43rd Ave                      Point Lobos Ave
Approach:       North Bound      South Bound       East Bound        West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign         Stop Sign         Stop Sign
Rights:           Include          Include           Include           Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Lanes:        0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      15   38    58    48  160    79    31  229    12    39  325    10
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   15   38    58    48  160    79    31  229    12    39  325    10
Added Vol:      0    1     0     7   18     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   15   39    58    55  178    79    31  229    12    39  325    10
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:    17   43    64    61  198    88    34  254    13    43  361    11
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   17   43    64    61  198    88    34  254    13    43  361    11
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   17   43    64    61  198    88    34  254    13    43  361    11
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       0.13 0.35  0.52  0.18 0.57  0.25  0.11 0.85  0.04  0.10 0.87  0.03
Final Sat.:    63  164   244    99  320   142    64  469    25    61  512    16
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.26 0.26  0.26  0.62 0.62  0.62  0.54 0.54  0.54  0.71 0.71  0.71
Crit Moves:             ****       ****             ****                   ****
Delay/Veh:   11.2 11.2  11.2  17.1 17.1  17.1  15.2 15.2  15.2  20.4 20.4  20.4
Delay Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  11.2 11.2  11.2  17.1 17.1  17.1  15.2 15.2  15.2  20.4 20.4  20.4
LOS by Move:    B    B     B     C    C     C     C    C     C     C    C     C
ApproachDel:      11.2              17.1              15.2              20.4
Delay Adj:        1.00              1.00              1.00              1.00
ApprAdjDel:       11.2              17.1              15.2              20.4
LOS by Appr:         B                 C                 C                 C
AllWayAvgQ:   0.2  0.2   0.2   1.3  1.3   1.3   0.9  0.9   0.9   1.9  1.9   1.9
*********************************************************************************
Note: Queue reported is the number of cars per lane.
*********************************************************************************
```

SFVAMC
2040 No Project
PM Peak Hour

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/Veh	Base V/C	Future LOS	Future Del/Veh	Future V/C	Change in
# 1 34th Ave / Clement St	B	14.1	0.639	B	14.1	0.639	+ 0.000 V/C
# 2 42nd Ave / Clement St	B	12.7	0.534	B	12.7	0.534	+ 0.000 V/C
# 3 43rd Avenue / Clement Street	B	14.0	0.664	B	14.0	0.664	+ 0.000 V/C
# 4 42nd Ave / Point Lobos Ave	C	15.3	0.684	C	15.3	0.684	+ 0.000 V/C
# 5 43rd Ave / Point Lobos Ave	C	19.0	0.760	C	19.0	0.760	+ 0.000 V/C

SFVAMC
2040 No Project
PM Peak Hour

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #1 34th Ave / Clement St

Cycle (sec):	100	Critical Vol./Cap.(X):	0.639
Loss Time (sec):	0	Average Delay (sec/veh):	14.1
Optimal Cycle:	0	Level Of Service:	B

Street Name:		34th Ave							Clement St			
Approach:		North Bound			South Bound			East Bound			West Bound	
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:		Stop Sign			Stop Sign			Stop Sign			Stop Sign	
Rights:		Include			Include			Include			Include	
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:		0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0	
Volume Module:												
Base Vol:	14	16	21	39	82	120	87	272	20	20	247	18
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	14	16	21	39	82	120	87	272	20	20	247	18
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHF Volume:	16	18	23	43	91	133	97	302	22	22	274	20
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	16	18	23	43	91	133	97	302	22	22	274	20
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	16	18	23	43	91	133	97	302	22	22	274	20
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.27	0.31	0.42	0.16	0.34	0.50	0.23	0.72	0.05	0.07	0.87	0.06
Final Sat.:	136	155	204	97	203	298	151	473	35	45	552	40
Capacity Analysis Module:												
Vol/Sat:	0.11	0.11	0.11	0.45	0.45	0.45	0.64	0.64	0.64	0.50	0.50	0.50
Crit Moves:		****				****	****				****	
Delay/Veh:	9.7	9.7	9.7	12.4	12.4	12.4	16.5	16.5	16.5	13.2	13.2	13.2
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	9.7	9.7	9.7	12.4	12.4	12.4	16.5	16.5	16.5	13.2	13.2	13.2
LOS by Move:	A	A	A	B	B	B	C	C	C	B	B	B
ApproachDel:		9.7			12.4			16.5			13.2	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		9.7			12.4			16.5			13.2	
LOS by Appr:		A			B			C			B	
AllWayAvgQ:	0.1	0.1	0.1	0.6	0.6	0.6	1.5	1.5	1.5	0.8	0.8	0.8

Note: Queue reported is the number of cars per lane.

SFVAMC
2040 No Project
PM Peak Hour

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #2 42nd Ave / Clement St

Cycle (sec):	100	Critical Vol./Cap.(X):	0.534
Loss Time (sec):	0	Average Delay (sec/veh):	12.7
Optimal Cycle:	0	Level Of Service:	B

Street Name:	42nd Ave						Clement St					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0		
Volume Module:												
Base Vol:	6	52	27	99	89	42	20	284	6	30	186	59
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	6	52	27	99	89	42	20	284	6	30	186	59
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHF Volume:	7	58	30	110	99	47	22	316	7	33	207	66
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	7	58	30	110	99	47	22	316	7	33	207	66
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	7	58	30	110	99	47	22	316	7	33	207	66
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.07	0.61	0.32	0.43	0.39	0.18	0.06	0.92	0.02	0.11	0.68	0.21
Final Sat.:	38	327	170	253	228	107	42	591	12	70	437	139
Capacity Analysis Module:												
Vol/Sat:	0.18	0.18	0.18	0.43	0.43	0.43	0.53	0.53	0.53	0.47	0.47	0.47
Crit Moves:			****		****		****				****	
Delay/Veh:	9.9	9.9	9.9	12.5	12.5	12.5	13.8	13.8	13.8	12.5	12.5	12.5
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	9.9	9.9	9.9	12.5	12.5	12.5	13.8	13.8	13.8	12.5	12.5	12.5
LOS by Move:	A	A	A	B	B	B	B	B	B	B	B	B
ApproachDel:		9.9			12.5			13.8			12.5	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		9.9			12.5			13.8			12.5	
LOS by Appr:		A			B			B			B	
AllWayAvgQ:	0.2	0.2	0.2	0.6	0.6	0.6	1.0	1.0	1.0	0.8	0.8	0.8

Note: Queue reported is the number of cars per lane.

SFVAMC
2040 No Project
PM Peak Hour

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #3 43rd Avenue / Clement Street

Cycle (sec):	100	Critical Vol./Cap.(X):	0.664
Loss Time (sec):	0	Average Delay (sec/veh):	14.0
Optimal Cycle:	0	Level Of Service:	B

Street Name:	43rd Ave						Clement St					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0		
Volume Module:												
Base Vol:	8	8	59	90	251	58	5	159	12	68	161	3
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	8	8	59	90	251	58	5	159	12	68	161	3
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHF Volume:	9	9	66	100	279	64	6	177	13	76	179	3
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	9	9	66	100	279	64	6	177	13	76	179	3
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	9	9	66	100	279	64	6	177	13	76	179	3
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.11	0.11	0.78	0.23	0.63	0.14	0.03	0.90	0.07	0.29	0.70	0.01
Final Sat.:	63	63	462	151	420	97	17	529	40	175	415	8
Capacity Analysis Module:												
Vol/Sat:	0.14	0.14	0.14	0.66	0.66	0.66	0.33	0.33	0.33	0.43	0.43	0.43
Crit Moves:		****			****			****			****	
Delay/Veh:	9.2	9.2	9.2	17.1	17.1	17.1	11.2	11.2	11.2	12.4	12.4	12.4
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	9.2	9.2	9.2	17.1	17.1	17.1	11.2	11.2	11.2	12.4	12.4	12.4
LOS by Move:	A	A	A	C	C	C	B	B	B	B	B	B
ApproachDel:		9.2			17.1			11.2			12.4	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		9.2			17.1			11.2			12.4	
LOS by Appr:		A			C			B			B	
AllWayAvgQ:	0.1	0.1	0.1	1.7	1.7	1.7	0.4	0.4	0.4	0.6	0.6	0.6

Note: Queue reported is the number of cars per lane.

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--------------------------------------------------------------------------------
                                   SFVAMC
                               2040 No Project
                                PM Peak Hour
--------------------------------------------------------------------------------
                       Level Of Service Computation Report
              2000 HCM 4-Way Stop Method (Base Volume Alternative)
********************************************************************************
Intersection #4 42nd Ave / Point Lobos Ave
********************************************************************************
Cycle (sec):          100              Critical Vol./Cap.(X):         0.684
Loss Time (sec):        0              Average Delay (sec/veh):        15.3
Optimal Cycle:          0              Level Of Service:                  C
********************************************************************************
Street Name:                42nd Ave                     Point Lobos Ave
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Min. Green:     0    0    0     0    0    0     0    0    0     0    0    0
Lanes:        0  0  1! 0  0   0  0  1! 0  0   0  0  1! 0  0   0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       6   12    2    27   58   28    31  312   52    29  398   23
Growth Adj:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse:    6   12    2    27   58   28    31  312   52    29  398   23
User Adj:    1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Adj:     0.90 0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90
PHF Volume:     7   13    2    30   64   31    34  347   58    32  442   26
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
Reduced Vol:    7   13    2    30   64   31    34  347   58    32  442   26
PCE Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
MLF Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
FinalVolume:    7   13    2    30   64   31    34  347   58    32  442   26
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Lanes:       0.30 0.60 0.10  0.24 0.51 0.25  0.08 0.79 0.13  0.06 0.89 0.05
Final Sat.:   146  291   49   130  280  135    57  572   95    47  646   37
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.05 0.05 0.05  0.23 0.23 0.23  0.61 0.61 0.61  0.68 0.68 0.68
Crit Moves:       ****             ****             ****             ****
Delay/Veh:    9.5  9.5  9.5  10.4 10.4 10.4  14.7 14.7 14.7  17.2 17.2 17.2
Delay Adj:   1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
AdjDel/Veh:   9.5  9.5  9.5  10.4 10.4 10.4  14.7 14.7 14.7  17.2 17.2 17.2
LOS by Move:    A    A    A     B    B    B     B    B    B     C    C    C
ApproachDel:       9.5             10.4             14.7             17.2
Delay Adj:        1.00             1.00             1.00             1.00
ApprAdjDel:        9.5             10.4             14.7             17.2
LOS by Appr:         A                B                B                C
AllWayAvgQ:   0.0  0.0  0.0   0.2  0.2  0.2   1.4  1.4  1.4   1.9  1.9  1.9
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
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--------------------------------------------------------------------------------
                                   SFVAMC
                               2040 No Project
                                PM Peak Hour
--------------------------------------------------------------------------------
                       Level Of Service Computation Report
              2000 HCM 4-Way Stop Method (Base Volume Alternative)
********************************************************************************
Intersection #5 43rd Ave / Point Lobos Ave
********************************************************************************
Cycle (sec):          100              Critical Vol./Cap.(X):         0.760
Loss Time (sec):        0              Average Delay (sec/veh):        19.0
Optimal Cycle:          0              Level Of Service:                  C
********************************************************************************
Street Name:                43rd Ave                     Point Lobos Ave
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Min. Green:     0    0    0     0    0    0     0    0    0     0    0    0
Lanes:        0  0  1! 0  0   0  0  1! 0  0   0  0  1! 0  0   0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      16   40   62    51  171   84    34  244   13    42  347   10
Growth Adj:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse:   16   40   62    51  171   84    34  244   13    42  347   10
User Adj:    1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Adj:     0.90 0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90
PHF Volume:    18   44   69    57  190   93    38  271   14    47  386   11
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
Reduced Vol:   18   44   69    57  190   93    38  271   14    47  386   11
PCE Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
MLF Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
FinalVolume:   18   44   69    57  190   93    38  271   14    47  386   11
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Lanes:       0.14 0.34 0.52  0.17 0.56 0.27  0.12 0.84 0.04  0.11 0.87 0.02
Final Sat.:    62  154  239    90  303  149    64  460   24    61  508   15
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.29 0.29 0.29  0.63 0.63 0.63  0.59 0.59 0.59  0.76 0.76 0.76
Crit Moves:       ****             ****        ****                  ****
Delay/Veh:   11.7 11.7 11.7  17.7 17.7 17.7  16.6 16.6 16.6  23.8 23.8 23.8
Delay Adj:   1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
AdjDel/Veh:  11.7 11.7 11.7  17.7 17.7 17.7  16.6 16.6 16.6  23.8 23.8 23.8
LOS by Move:    B    B    B     C    C    C     C    C    C     C    C    C
ApproachDel:      11.7             17.7             16.6             23.8
Delay Adj:        1.00             1.00             1.00             1.00
ApprAdjDel:       11.7             17.7             16.6             23.8
LOS by Appr:         B                C                C                C
AllWayAvgQ:   0.3  0.3  0.3   1.3  1.3  1.3   1.1  1.1  1.1   2.4  2.4  2.4
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
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SFVAMC
2040 + Phase 1 and 2 - Alternative 1
PM Peak Hour

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/ Veh	Base V/ C	Future LOS	Future Del/ Veh	Future V/ C	Change in
# 1 34th Ave / Clement St	B	14.1	0.639	C	17.0	0.739	+ 0.100 V/C
# 2 42nd Ave / Clement St	B	12.7	0.534	C	16.9	0.666	+ 0.132 V/C
# 3 43rd Avenue / Clement Street	B	14.0	0.664	C	20.3	0.834	+ 0.170 V/C
# 4 42nd Ave / Point Lobos Ave	C	15.3	0.684	C	18.4	0.762	+ 0.077 V/C
# 5 43rd Ave / Point Lobos Ave	C	19.0	0.760	C	23.3	0.819	+ 0.059 V/C

SFVAMC
2040 + Phase 1 and 2 - Alternative 1
PM Peak Hour

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #1 34th Ave / Clement St

Cycle (sec):	100	Critical Vol./Cap.(X):	0.739
Loss Time (sec):	0	Average Delay (sec/veh):	17.0
Optimal Cycle:	0	Level Of Service:	C

Street Name:	34th Ave						Clement St					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	1!	0 0	0 0	1!	0 0	0 0	1!	0 0	0 0	1!	0 0
Volume Module:												
Base Vol:	14	16	21	39	82	120	87	272	20	20	247	18
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	14	16	21	39	82	120	87	272	20	20	247	18
Added Vol:	0	0	0	0	0	0	0	52	0	0	38	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	14	16	21	39	82	120	87	324	20	20	285	18
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHF Volume:	16	18	23	43	91	133	97	360	22	22	317	20
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	16	18	23	43	91	133	97	360	22	22	317	20
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	16	18	23	43	91	133	97	360	22	22	317	20
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.27	0.31	0.42	0.16	0.34	0.50	0.20	0.75	0.05	0.06	0.88	0.06
Final Sat.:	127	145	191	92	193	282	131	487	30	39	549	35
Capacity Analysis Module:												
Vol/Sat:	0.12	0.12	0.12	0.47	0.47	0.47	0.74	0.74	0.74	0.58	0.58	0.58
Crit Moves:			****	****				****			****	
Delay/Veh:	10.2	10.2	10.2	13.3	13.3	13.3	21.1	21.1	21.1	15.2	15.2	15.2
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	10.2	10.2	10.2	13.3	13.3	13.3	21.1	21.1	21.1	15.2	15.2	15.2
LOS by Move:	B	B	B	B	B	B	C	C	C	C	C	C
ApproachDel:		10.2			13.3			21.1			15.2	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		10.2			13.3			21.1			15.2	
LOS by Appr:		B			B			C			C	
AllWayAvgQ:	0.1	0.1	0.1	0.7	0.7	0.7	2.3	2.3	2.3	1.2	1.2	1.2

Note: Queue reported is the number of cars per lane.

SFVAMC
2040 + Phase 1 and 2 - Alternative 1
PM Peak Hour

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #2 42nd Ave / Clement St

Cycle (sec):	100	Critical Vol./Cap.(X):	0.666
Loss Time (sec):	0	Average Delay (sec/veh):	16.9
Optimal Cycle:	0	Level Of Service:	C

Street Name:	42nd Ave						Clement St					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0		
Volume Module:												
Base Vol:	6	52	27	99	89	42	20	284	6	30	186	59
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	6	52	27	99	89	42	20	284	6	30	186	59
Added Vol:	0	38	0	23	38	6	6	29	0	0	15	23
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	6	90	27	122	127	48	26	313	6	30	201	82
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHF Volume:	7	100	30	136	141	53	29	348	7	33	223	91
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	7	100	30	136	141	53	29	348	7	33	223	91
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	7	100	30	136	141	53	29	348	7	33	223	91
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.05	0.73	0.22	0.41	0.43	0.16	0.07	0.91	0.02	0.10	0.64	0.26
Final Sat.:	23	339	102	223	232	88	43	522	10	55	369	151
Capacity Analysis Module:												
Vol/Sat:	0.30	0.30	0.30	0.61	0.61	0.61	0.67	0.67	0.67	0.60	0.60	0.60
Crit Moves:	****				****			****		****		
Delay/Veh:	11.8	11.8	11.8	17.1	17.1	17.1	18.9	18.9	18.9	16.5	16.5	16.5
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	11.8	11.8	11.8	17.1	17.1	17.1	18.9	18.9	18.9	16.5	16.5	16.5
LOS by Move:	B	B	B	C	C	C	C	C	C	C	C	C
ApproachDel:		11.8			17.1			18.9			16.5	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		11.8			17.1			18.9			16.5	
LOS by Appr:		B			C			C			C	
AllWayAvgQ:	0.3	0.3	0.3	1.2	1.2	1.2	1.6	1.6	1.6	1.2	1.2	1.2

Note: Queue reported is the number of cars per lane.

SFVAMC
2040 + Phase 1 and 2 - Alternative 1
PM Peak Hour

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #3 43rd Avenue / Clement Street

Cycle (sec):	100	Critical Vol./Cap.(X):	0.834
Loss Time (sec):	0	Average Delay (sec/veh):	20.3
Optimal Cycle:	0	Level Of Service:	C

Street Name:	43rd Ave						Clement St					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0		
Volume Module:												
Base Vol:	8	8	59	90	251	58	5	159	12	68	161	3
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	8	8	59	90	251	58	5	159	12	68	161	3
Added Vol:	0	24	0	29	48	7	4	6	0	0	6	15
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	8	32	59	119	299	65	9	165	12	68	167	18
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHF Volume:	9	36	66	132	332	72	10	183	13	76	186	20
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	9	36	66	132	332	72	10	183	13	76	186	20
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	9	36	66	132	332	72	10	183	13	76	186	20
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.08	0.32	0.60	0.25	0.62	0.13	0.05	0.89	0.06	0.27	0.66	0.07
Final Sat.:	43	173	318	158	398	87	26	471	34	148	364	39
Capacity Analysis Module:												
Vol/Sat:	0.21	0.21	0.21	0.83	0.83	0.83	0.39	0.39	0.39	0.51	0.51	0.51
Crit Moves:	****				****			****		****		
Delay/Veh:	10.3	10.3	10.3	28.5	28.5	28.5	12.6	12.6	12.6	14.5	14.5	14.5
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	10.3	10.3	10.3	28.5	28.5	28.5	12.6	12.6	12.6	14.5	14.5	14.5
LOS by Move:	B	B	B	D	D	D	B	B	B	B	B	B
ApproachDel:		10.3			28.5			12.6			14.5	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		10.3			28.5			12.6			14.5	
LOS by Appr:		B			D			B			B	
AllWayAvgQ:	0.2	0.2	0.2	3.6	3.6	3.6	0.5	0.5	0.5	0.8	0.8	0.8

Note: Queue reported is the number of cars per lane.

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-------------------------------------------------------------------------------
                                   SFVAMC
                     2040 + Phase 1 and 2 - Alternative 1
                                PM Peak Hour
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
          2000 HCM 4-Way Stop Method (Future Volume Alternative)
*******************************************************************************
Intersection #4 42nd Ave / Point Lobos Ave
*******************************************************************************
Cycle (sec):          100                Critical Vol./Cap.(X):         0.762
Loss Time (sec):        0                Average Delay (sec/veh):        18.4
Optimal Cycle:          0                Level Of Service:                  C
*******************************************************************************
Street Name:                  42nd Ave                    Point Lobos Ave
Approach:        North Bound      South Bound      East Bound       West Bound
Movement:      L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Lanes:        0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       6   12     2    27   58    28    31  312    52    29  398    23
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    6   12     2    27   58    28    31  312    52    29  398    23
Added Vol:      0   27     0    11   27     0     0   14     0     0    7    11
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    6   39     2    38   85    28    31  326    52    29  405    34
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:     7   43     2    42   94    31    34  362    58    32  450    38
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    7   43     2    42   94    31    34  362    58    32  450    38
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    7   43     2    42   94    31    34  362    58    32  450    38
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       0.13 0.83  0.04  0.25 0.56  0.19  0.07 0.80  0.13  0.06 0.87  0.07
Final Sat.:    59  385    20   130  292    96    51  535    85    42  591    50
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.11 0.11  0.11  0.32 0.32  0.32  0.68 0.68  0.68  0.76 0.76  0.76
Crit Moves:       ****             ****             ****             ****
Delay/Veh:   10.3 10.3  10.3  11.8 11.8  11.8  17.8 17.8  17.8  21.9 21.9  21.9
Delay Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  10.3 10.3  10.3  11.8 11.8  11.8  17.8 17.8  17.8  21.9 21.9  21.9
LOS by Move:    B    B     B     B    B     B     C    C     C     C    C     C
ApproachDel:      10.3             11.8             17.8             21.9
Delay Adj:        1.00             1.00             1.00             1.00
ApprAdjDel:       10.3             11.8             17.8             21.9
LOS by Appr:         B                B                C                C
AllWayAvgQ:   0.1  0.1   0.1   0.4  0.4   0.4   1.8  1.8   1.8   2.6  2.6   2.6
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
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-------------------------------------------------------------------------------
                                   SFVAMC
                     2040 + Phase 1 and 2 - Alternative 1
                                PM Peak Hour
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
          2000 HCM 4-Way Stop Method (Future Volume Alternative)
*******************************************************************************
Intersection #5 43rd Ave / Point Lobos Ave
*******************************************************************************
Cycle (sec):          100                Critical Vol./Cap.(X):         0.819
Loss Time (sec):        0                Average Delay (sec/veh):        23.3
Optimal Cycle:          0                Level Of Service:                  C
*******************************************************************************
Street Name:                  43rd Ave                    Point Lobos Ave
Approach:        North Bound      South Bound      East Bound       West Bound
Movement:      L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Lanes:        0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      16   40    62    51  171    84    34  244    13    42  347    10
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   16   40    62    51  171    84    34  244    13    42  347    10
Added Vol:      0   17     0    14   34     0     0    0     0     0    0     7
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   16   57    62    65  205    84    34  244    13    42  347    17
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:    18   63    69    72  228    93    38  271    14    47  386    19
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   18   63    69    72  228    93    38  271    14    47  386    19
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   18   63    69    72  228    93    38  271    14    47  386    19
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       0.12 0.42  0.46  0.18 0.58  0.24  0.12 0.84  0.04  0.10 0.86  0.04
Final Sat.:    51  183   199    97  306   125    60  428    23    57  471    23
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.35 0.35  0.35  0.74 0.74  0.74  0.63 0.63  0.63  0.82 0.82  0.82
Crit Moves:  ****                  ****                  ****        ****
Delay/Veh:   12.9 12.9  12.9  23.7 23.7  23.7  18.8 18.8  18.8  29.6 29.6  29.6
Delay Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  12.9 12.9  12.9  23.7 23.7  23.7  18.8 18.8  18.8  29.6 29.6  29.6
LOS by Move:    B    B     B     C    C     C     C    C     C     D    D     D
ApproachDel:      12.9             23.7             18.8             29.6
Delay Adj:        1.00             1.00             1.00             1.00
ApprAdjDel:       12.9             23.7             18.8             29.6
LOS by Appr:         B                C                C                D
AllWayAvgQ:   0.3  0.3   0.3   2.1  2.1   2.1   1.3  1.3   1.3   3.1  3.1   3.1
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
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-------------------------------------------------------------------------------
                                   SFVAMC
                     2040 + Phase 1 and 2 - Alternative 2
                                PM Peak Hour
-------------------------------------------------------------------------------
                            Impact Analysis Report
                               Level Of Service

Intersection                                 Base         Future       Change
                                           Del/   V/     Del/   V/        in
                                       LOS Veh    C   LOS Veh    C
#  1 34th Ave / Clement St              B  14.1 0.639   B  14.7 0.669  + 0.029 V/C

#  2 42nd Ave / Clement St              B  12.7 0.534   B  13.2 0.566  + 0.033 V/C

#  3 43rd Avenue / Clement Street       B  14.0 0.664   C  16.1 0.741  + 0.077 V/C

#  4 42nd Ave / Point Lobos Ave         C  15.3 0.684   C  15.6 0.691  + 0.006 V/C

#  5 43rd Ave / Point Lobos Ave         C  19.0 0.760   C  20.4 0.777  + 0.018 V/C
```



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-------------------------------------------------------------------------------
                                   SFVAMC
                     2040 + Phase 1 and 2 - Alternative 2
                                PM Peak Hour
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
           2000 HCM 4-Way Stop Method (Future Volume Alternative)
*******************************************************************************
Intersection #1 34th Ave / Clement St
*******************************************************************************
Cycle (sec):          100                Critical Vol./Cap.(X):         0.669
Loss Time (sec):        0                Average Delay (sec/veh):        14.7
Optimal Cycle:          0                Level Of Service:                  B
*******************************************************************************
Street Name:                 34th Ave                        Clement St
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:      L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Lanes:        0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      14   16    21    39   82   120    87  272    20    20  247    18
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   14   16    21    39   82   120    87  272    20    20  247    18
Added Vol:      0    0     0     0    0     0     0   17     0     0    3     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   14   16    21    39   82   120    87  289    20    20  250    18
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:    16   18    23    43   91   133    97  321    22    22  278    20
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   16   18    23    43   91   133    97  321    22    22  278    20
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   16   18    23    43   91   133    97  321    22    22  278    20
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       0.27 0.31  0.42  0.16 0.34  0.50  0.22 0.73  0.05  0.07 0.87  0.06
Final Sat.:   133  152   200    96  201   294   145  480    33    44  549    40
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.12 0.12  0.12  0.45 0.45  0.45  0.67 0.67  0.67  0.51 0.51  0.51
Crit Moves:       ****             ****             ****             ****
Delay/Veh:    9.8  9.8   9.8  12.6 12.6  12.6  17.6 17.6  17.6  13.4 13.4  13.4
Delay Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   9.8  9.8   9.8  12.6 12.6  12.6  17.6 17.6  17.6  13.4 13.4  13.4
LOS by Move:    A    A     A     B    B     B     C    C     C     B    B     B
ApproachDel:       9.8             12.6             17.6             13.4
Delay Adj:        1.00             1.00             1.00             1.00
ApprAdjDel:        9.8             12.6             17.6             13.4
LOS by Appr:         A                B                C                B
AllWayAvgQ:   0.1  0.1   0.1   0.7  0.7   0.7   1.7  1.7   1.7   0.9  0.9   0.9
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

```
------------------------------------------------------------------------------
                                  SFVAMC
                   2040 + Phase 1 and 2 - Alternative 2
                               PM Peak Hour
------------------------------------------------------------------------------
                    Level Of Service Computation Report
          2000 HCM 4-Way Stop Method (Future Volume Alternative)
******************************************************************************
Intersection #2 42nd Ave / Clement St
******************************************************************************
Cycle (sec):          100              Critical Vol./Cap.(X):         0.566
Loss Time (sec):        0              Average Delay (sec/veh):        13.2
Optimal Cycle:          0              Level Of Service:                  B
******************************************************************************
Street Name:                 42nd Ave                         Clement St
Approach:        North Bound      South Bound       East Bound       West Bound
Movement:      L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Lanes:        0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       6   52    27    99   89    42    20  284     6    30  186    59
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    6   52    27    99   89    42    20  284     6    30  186    59
Added Vol:      0    3     0     2    3     1     1   15     0     0    1     2
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    6   55    27   101   92    43    21  299     6    30  187    61
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:     7   61    30   112  102    48    23  332     7    33  208    68
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    7   61    30   112  102    48    23  332     7    33  208    68
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    7   61    30   112  102    48    23  332     7    33  208    68
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       0.07 0.62  0.31  0.43 0.39  0.18  0.06 0.92  0.02  0.11 0.67  0.22
Final Sat.:    36  326   160   248  226   106    41  586    12    69  428   139
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.19 0.19  0.19  0.45 0.45  0.45  0.57 0.57  0.57  0.49 0.49  0.49
Crit Moves:       ****             ****             ****             ****
Delay/Veh:   10.1 10.1  10.1  12.9 12.9  12.9  14.6 14.6  14.6  12.9 12.9  12.9
Delay Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  10.1 10.1  10.1  12.9 12.9  12.9  14.6 14.6  14.6  12.9 12.9  12.9
LOS by Move:    B    B     B     B    B     B     B    B     B     B    B     B
ApproachDel:      10.1             12.9             14.6             12.9
Delay Adj:        1.00             1.00             1.00             1.00
ApprAdjDel:       10.1             12.9             14.6             12.9
LOS by Appr:         B                B                B                B
AllWayAvgQ:   0.2  0.2   0.2   0.7  0.7   0.7   1.1  1.1   1.1   0.8  0.8   0.8
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```



```
------------------------------------------------------------------------------
                                  SFVAMC
                   2040 + Phase 1 and 2 - Alternative 2
                               PM Peak Hour
------------------------------------------------------------------------------
                    Level Of Service Computation Report
          2000 HCM 4-Way Stop Method (Future Volume Alternative)
******************************************************************************
Intersection #3 43rd Avenue / Clement Street
******************************************************************************
Cycle (sec):          100              Critical Vol./Cap.(X):         0.741
Loss Time (sec):        0              Average Delay (sec/veh):        16.1
Optimal Cycle:          0              Level Of Service:                  C
******************************************************************************
Street Name:                 43rd Ave                         Clement St
Approach:        North Bound      South Bound       East Bound       West Bound
Movement:      L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Lanes:        0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       8    8    59    90  251    58     5  159    12    68  161     3
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    8    8    59    90  251    58     5  159    12    68  161     3
Added Vol:      0    2     0    15   25     4     0    1     0     0    1     1
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    8   10    59   105  276    62     5  160    12    68  162     4
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:     9   11    66   117  307    69     6  178    13    76  180     4
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    9   11    66   117  307    69     6  178    13    76  180     4
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    9   11    66   117  307    69     6  178    13    76  180     4
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       0.10 0.13  0.77  0.24 0.62  0.14  0.03 0.90  0.07  0.29 0.69  0.02
Final Sat.:    59   74   435   157  414    93    16  511    38   168  400    10
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.15 0.15  0.15  0.74 0.74  0.74  0.35 0.35  0.35  0.45 0.45  0.45
Crit Moves:       ****                   ****       ****             ****
Delay/Veh:    9.4  9.4   9.4  20.7 20.7  20.7  11.6 11.6  11.6  13.0 13.0  13.0
Delay Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   9.4  9.4   9.4  20.7 20.7  20.7  11.6 11.6  11.6  13.0 13.0  13.0
LOS by Move:    A    A     A     C    C     C     B    B     B     B    B     B
ApproachDel:       9.4             20.7             11.6             13.0
Delay Adj:        1.00             1.00             1.00             1.00
ApprAdjDel:        9.4             20.7             11.6             13.0
LOS by Appr:         A                C                B                B
AllWayAvgQ:   0.1  0.1   0.1   2.3  2.3   2.3   0.4  0.4   0.4   0.7  0.7   0.7
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

```
---------------------------------------------------------------------------
                                  SFVAMC
                   2040 + Phase 1 and 2 - Alternative 2
                               PM Peak Hour
---------------------------------------------------------------------------
                     Level Of Service Computation Report
          2000 HCM 4-Way Stop Method (Future Volume Alternative)
***************************************************************************
Intersection #4 42nd Ave / Point Lobos Ave
***************************************************************************
Cycle (sec):          100               Critical Vol./Cap.(X):        0.691
Loss Time (sec):        0               Average Delay (sec/veh):       15.6
Optimal Cycle:          0               Level Of Service:                 C
***************************************************************************
Street Name:                42nd Ave                  Point Lobos Ave
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Min. Green:    0    0     0    0    0     0    0    0     0    0    0     0
Lanes:       0  0  1! 0  0   0  0  1! 0  0   0  0  1! 0  0   0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      6   12     2   27   58    28   31  312    52   29  398    23
Growth Adj:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Initial Bse:   6   12     2   27   58    28   31  312    52   29  398    23
Added Vol:     0    2     0    1    2     0    0    7     0    0    0     1
PasserByVol:   0    0     0    0    0     0    0    0     0    0    0     0
Initial Fut:   6   14     2   28   60    28   31  319    52   29  398    24
User Adj:    1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Adj:     0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90  0.90
PHF Volume:    7   16     2   31   67    31   34  354    58   32  442    27
Reduct Vol:    0    0     0    0    0     0    0    0     0    0    0     0
Reduced Vol:   7   16     2   31   67    31   34  354    58   32  442    27
PCE Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
FinalVolume:   7   16     2   31   67    31   34  354    58   32  442    27
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Lanes:       0.27 0.64  0.09 0.24 0.52  0.24 0.08 0.79  0.13 0.06 0.89  0.05
Final Sat.:   131  307    44  131  280   131   55  571    93   47  640    39
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.05 0.05  0.05 0.24 0.24  0.24 0.62 0.62  0.62 0.69 0.69  0.69
Crit Moves:             ****  ****                   ****             ****
Delay/Veh:    9.6  9.6   9.6 10.5 10.5  10.5 15.2 15.2  15.2 17.6 17.6  17.6
Delay Adj:   1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
AdjDel/Veh:   9.6  9.6   9.6 10.5 10.5  10.5 15.2 15.2  15.2 17.6 17.6  17.6
LOS by Move:    A    A     A    B    B     B    C    C     C    C    C     C
ApproachDel:        9.6             10.5             15.2             17.6
Delay Adj:         1.00             1.00             1.00             1.00
ApprAdjDel:         9.6             10.5             15.2             17.6
LOS by Appr:          A                B                C                C
AllWayAvgQ:   0.0  0.0   0.0  0.2  0.2   0.2  1.5  1.5   1.5  2.0  2.0   2.0
***************************************************************************
Note: Queue reported is the number of cars per lane.
***************************************************************************
```



```
---------------------------------------------------------------------------
                                  SFVAMC
                   2040 + Phase 1 and 2 - Alternative 2
                               PM Peak Hour
---------------------------------------------------------------------------
                     Level Of Service Computation Report
          2000 HCM 4-Way Stop Method (Future Volume Alternative)
***************************************************************************
Intersection #5 43rd Ave / Point Lobos Ave
***************************************************************************
Cycle (sec):          100               Critical Vol./Cap.(X):        0.777
Loss Time (sec):        0               Average Delay (sec/veh):       20.4
Optimal Cycle:          0               Level Of Service:                 C
***************************************************************************
Street Name:                43rd Ave                  Point Lobos Ave
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Min. Green:    0    0     0    0    0     0    0    0     0    0    0     0
Lanes:       0  0  1! 0  0   0  0  1! 0  0   0  0  1! 0  0   0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     16   40    62   51  171    84   34  244    13   42  347    10
Growth Adj:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Initial Bse:  16   40    62   51  171    84   34  244    13   42  347    10
Added Vol:     0    1     0    7   18     0    0    0     0    0    0     0
PasserByVol:   0    0     0    0    0     0    0    0     0    0    0     0
Initial Fut:  16   41    62   58  189    84   34  244    13   42  347    10
User Adj:    1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Adj:     0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90  0.90
PHF Volume:   18   46    69   64  210    93   38  271    14   47  386    11
Reduct Vol:    0    0     0    0    0     0    0    0     0    0    0     0
Reduced Vol:  18   46    69   64  210    93   38  271    14   47  386    11
PCE Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
FinalVolume:  18   46    69   64  210    93   38  271    14   47  386    11
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Lanes:       0.13 0.34  0.53 0.18 0.57  0.25 0.12 0.84  0.04 0.11 0.87  0.02
Final Sat.:    60  153   231   95  309   137   62  448    24   60  496    14
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.30 0.30  0.30 0.68 0.68  0.68 0.61 0.61  0.61 0.78 0.78  0.78
Crit Moves:       ****             ****             ****             ****
Delay/Veh:   12.0 12.0  12.0 19.9 19.9  19.9 17.3 17.3  17.3 25.4 25.4  25.4
Delay Adj:   1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
AdjDel/Veh:  12.0 12.0  12.0 19.9 19.9  19.9 17.3 17.3  17.3 25.4 25.4  25.4
LOS by Move:    B    B     B    C    C     C    C    C     C    D    D     D
ApproachDel:       12.0             19.9             17.3             25.4
Delay Adj:         1.00             1.00             1.00             1.00
ApprAdjDel:        12.0             19.9             17.3             25.4
LOS by Appr:          B                C                C                D
AllWayAvgQ:   0.3  0.3   0.3  1.6  1.6   1.6  1.2  1.2   1.2  2.6  2.6   2.6
***************************************************************************
Note: Queue reported is the number of cars per lane.
***************************************************************************
```

Appendix C
Roadway Segment Level of Service Calculations

SFVA Intersection and Roadway Segment Volumes
No Project Conditions

Existing (2011) Conditions

		Intersections						Roadway Segments	
		1	2	3	4	5		a	b
NB	Left	12	5	7	5	14			
	Through	14	45	7	10	35			
	Right	18	23	51	2	54			
EB	Left	75	17	4	27	29			
	Through	235	246	138	270	211			
	Right	17	5	10	45	11			
SB	Left	34	86	78	23	44			
	Through	71	77	217	50	148			
	Right	104	36	50	24	73			
WB	Left	17	26	59	25	36			
	Through	214	161	139	344	300			
	Right	16	51	3	20	9			
Northbound								73	73
Southbound								108	286

V/C Ratios of Roadway Segments
Capacity: 450 vehicles per hour per direction
(assumed for a local residential road)

	a	b
v/c: NB	0.16	0.16
v/c: SB	0.24	0.64

Background Traffic Volume Growth	
Annual Growth Rate	0.5%
Growth by 2020	1.046
Growth by 2027	1.083
Growth by 2040	1.156

Near-Term (2020) Conditions - WITHOUT PROJECT (Alternative 4)

		Intersections						Roadway Segments	
		1	2	3	4	5		a	b
NB	Left	13	5	7	5	15			
	Through	15	47	7	10	37			
	Right	19	24	53	2	56			
EB	Left	78	18	4	28	30			
	Through	246	257	144	282	221			
	Right	18	5	10	47	12			
SB	Left	36	90	82	24	46			
	Through	74	81	227	52	155			
	Right	109	38	52	25	76			
WB	Left	18	27	62	26	38			
	Through	224	168	145	360	314			
	Right	17	53	3	21	9			
Northbound								76	76
Southbound								113	299

	a	b
v/c: NB	0.17	0.17
v/c: SB	0.25	0.66

Long-Term (2027) Conditions - WITHOUT PROJECT (Alternative 4)

		Intersections						Roadway Segments	
		1	2	3	4	5		a	b
NB	Left	13	5	8	5	15			
	Through	15	49	8	11	38			
	Right	19	25	55	2	58			
EB	Left	81	18	4	29	31			
	Through	255	266	149	292	229			
	Right	18	5	11	49	12			
SB	Left	37	93	84	25	48			
	Through	77	83	235	54	160			
	Right	113	39	54	26	79			
WB	Left	18	28	64	27	39			
	Through	232	174	151	373	325			
	Right	17	55	3	22	10			
Northbound								79	79
Southbound								117	310

	a	b
v/c: NB	0.18	0.18
v/c: SB	0.26	0.69

Cumulative (2040) Conditions - WITHOUT PROJECT (Alternative 4)

		Intersections						Roadway Segments	
		1	2	3	4	5		a	b
NB	Left	14	6	8	6	16			
	Through	16	52	8	12	40			
	Right	21	27	59	2	62			
EB	Left	87	20	5	31	34			
	Through	272	284	159	312	244			
	Right	20	6	12	52	13			
SB	Left	39	99	90	27	51			
	Through	82	89	251	58	171			
	Right	120	42	58	28	84			
WB	Left	20	30	68	29	42			
	Through	247	186	161	398	347			
	Right	18	59	3	23	10			
Northbound								84	84
Southbound								125	331

	a	b
v/c: NB	0.19	0.19
v/c: SB	0.28	0.73

SFVA Intersection and Roadway Segment Volumes
Total Trips - Alt 1

Existing (2011) Conditions

		Intersections						Roadway Segments	
		1	2	3	4	5		a	b
NB	Left	12	5	7	5	14			
	Through	14	45	7	10	35			
	Right	18	23	51	2	54			
EB	Left	75	17	4	27	29			
	Through	235	246	138	270	211			
	Right	17	5	10	45	11			
SB	Left	34	86	78	23	44			
	Through	71	77	217	50	148			
	Right	104	36	50	24	73			
WB	Left	17	26	59	25	36			
	Through	214	161	139	344	300			
	Right	16	51	3	20	9			
Northbound								73	73
Southbound								108	286

V/C Ratios of Roadway Segments
Capacity: 450 vehicles per hour per direction
(assumed for a local residential road)

	a	b
v/c: NB	0.16	0.16
v/c: SB	0.24	0.64

Near-Term (2020) Conditions - WITH PROJECT (Alternative 1)

		Intersections						Roadway Segments	
		1	2	3	4	5		a	b
NB	Left	13	5	7	5	15			
	Through	15	50	9	12	38			
	Right	19	24	53	2	56			
EB	Left	78	19	4	28	30			
	Through	263	272	145	289	221			
	Right	18	5	10	47	12			
SB	Left	36	92	97	25	53			
	Through	74	84	252	54	173			
	Right	109	39	56	25	76			
WB	Left	18	27	62	26	38			
	Through	227	169	146	360	314			
	Right	17	55	4	22	9			
Northbound								79	77
Southbound								116	324

	a	b
v/c: NB	0.18	0.17
v/c: SB	0.26	0.72

Long-Term (2027) Conditions - WITH PROJECT (Alternative 1)

		Intersections						Roadway Segments	
		1	2	3	4	5		a	b
NB	Left	13	5	8	5	15			
	Through	15	87	32	38	55			
	Right	19	25	55	2	58			
EB	Left	81	24	8	29	31			
	Through	307	295	155	306	229			
	Right	18	5	11	49	12			
SB	Left	37	116	113	36	62			
	Through	77	121	283	81	194			
	Right	113	45	61	26	79			
WB	Left	18	28	64	27	39			
	Through	270	189	157	380	325			
	Right	17	78	18	33	17			
Northbound								117	103
Southbound								155	358

	a	b
v/c: NB	0.26	0.23
v/c: SB	0.34	0.80

Cumulative (2040) Conditions - WITH PROJECT (Alternative 1)

		Intersections						Roadway Segments	
		1	2	3	4	5		a	b
NB	Left	14	6	8	6	16			
	Through	16	90	32	39	57			
	Right	21	27	59	2	62			
EB	Left	87	26	9	31	34			
	Through	324	313	165	326	244			
	Right	20	6	12	52	13			
SB	Left	39	122	119	38	65			
	Through	82	127	299	85	205			
	Right	120	48	65	28	84			
WB	Left	20	30	68	29	42			
	Through	285	201	167	405	347			
	Right	18	82	18	34	17			
Northbound								122	108
Southbound								163	379

	a	b
v/c: NB	0.27	0.24
v/c: SB	0.36	0.84

SFVA Intersection and Roadway Segment Volumes
Total Trips - Alt 3

Existing (2011) Conditions

		Intersections						Roadway Segments	
		1	2	3	4	5		a	b
NB	Left	12	5	7	5	14			
	Through	14	45	7	10	35			
	Right	18	23	51	2	54			
EB	Left	75	17	4	27	29			
	Through	235	246	138	270	211			
	Right	17	5	10	45	11			
SB	Left	34	86	78	23	44			
	Through	71	77	217	50	148			
	Right	104	36	50	24	73			
WB	Left	17	26	59	25	36			
	Through	214	161	139	344	300			
	Right	16	51	3	20	9			
Northbound								73	73
Southbound								108	286

V/C Ratios of Roadway Segments
Capacity: 450 vehicles per hour per direction
(assumed for a local residential road)

	a	b
v/c: NB	0.16	0.16
v/c: SB	0.24	0.64

Near-Term (2020) Conditions - WITH PROJECT (Alternative 3)

		Intersections						Roadway Segments	
		1	2	3	4	5		a	b
NB	Left	13	5	7	5	15			
	Through	15	50	9	12	38			
	Right	19	24	53	2	56			
EB	Left	78	19	4	28	30			
	Through	263	272	145	289	221			
	Right	18	5	10	47	12			
SB	Left	36	92	97	25	53			
	Through	74	84	252	54	173			
	Right	109	39	56	25	76			
WB	Left	18	27	62	26	38			
	Through	227	169	146	360	314			
	Right	17	55	4	22	9			
Northbound								79	77
Southbound								116	324

	a	b
v/c: NB	0.18	0.17
v/c: SB	0.26	0.72

Long-Term (2027) Conditions - WITH PROJECT (Alternative 3)

		Intersections						Roadway Segments	
		1	2	3	4	5		a	b
NB	Left	13	5	8	5	15			
	Through	15	52	10	13	39			
	Right	19	25	55	2	58			
EB	Left	81	19	4	29	31			
	Through	272	281	150	299	229			
	Right	18	5	11	49	12			
SB	Left	37	95	99	26	55			
	Through	77	86	260	56	178			
	Right	113	40	58	26	79			
WB	Left	18	28	64	27	39			
	Through	235	175	152	373	325			
	Right	17	57	4	23	10			
Northbound								82	80
Southbound								120	335

	a	b
v/c: NB	0.18	0.18
v/c: SB	0.27	0.74

Cumulative (2040) Conditions - WITH PROJECT (Alternative 3)

		Intersections						Roadway Segments	
		1	2	3	4	5		a	b
NB	Left	14	6	8	6	16			
	Through	16	55	10	14	41			
	Right	21	27	59	2	62			
EB	Left	87	21	5	31	34			
	Through	289	299	160	319	244			
	Right	20	6	12	52	13			
SB	Left	39	101	105	28	58			
	Through	82	92	276	60	189			
	Right	120	43	62	28	84			
WB	Left	20	30	68	29	42			
	Through	250	187	162	398	347			
	Right	18	61	4	24	10			
Northbound								87	85
Southbound								128	356

	a	b
v/c: NB	0.19	0.19
v/c: SB	0.28	0.79

Appendix D
Transit Ridership and Capacity Calculations

Line	Direction	TEP Ridership	MLP	Capacity			Utilization	SF Model Ridership		Annual Growth Rate	Future Ridership			Future Capacity			Utilization		
		2011		Buses per hour	Capacity per bus	Total		2010	2035		2020	2027	2040	2020	2027	2040	2020	2027	2040
38 Geary	Inbound	352	Geary Boulevard / Laguna Street	8	94	752	46.8%	3,323	3,968		439	506	631	940	940	940			
	Outbound	450	Geary Boulevard / Franklin Street	7.5	94	705	63.8%	4,199	5,496		580	681	868						
38L Geary Limited	Inbound	556	Geary Boulevard / Divisadero Street	10.9	94	1,025	54.2%	3,659	7,787		693	799	997	1,880	1,880	1,880			
	Outbound	862	Geary Boulevard / Van Ness Avenue	10.9	94	1,025	84.1%	4,479	10,924		1,111	1,304	1,663						
38AX Geary A Express	Inbound																		
	Outbound	280	Pine Street / Montgomery Street	6.7	63	420	66.7%	311	59		361	424	540						
38BX Geary A Express	Inbound																		
	Outbound	222	Pine Street / Montgomery Street	6.0	63	378	58.7%	191	56		286	336	428						
38X Geary Express	Inbound																		
	Outbound										647	759	969						
Corridor Total	Inbound	908				1,777	51.1%	6,982	11,755	2.73%	1,131	1,305	1,628	2,820	2,820	2,820	40.1%	46.3%	57.7%
	Outbound	1,814				2,528	71.7%	9,180	16,535	3.20%	2,337	2,744	3,500						

Values from TEP Draft EIR	Inbound						
	Outbound	1,814				2,528	71.7%

	Future Ridership 2020	2027	2040	Future Capacity 2020	2027	2040	Utilization 2020	2027	2040
Adjustments	1,142	1,324	1,661	2,820	2,820	2,820	40.5%	46.9%	58.9%
	2,359	2,783	3,570	3,826	3,826	3,826	61.7%	72.7%	93.3%

Outbound ridership for 2020, 2027, and 2040 were calculated by prorating the TEP's assumed growth rate for Existing to 2035. Inbound ridership was adjusted to match the TEP growth rates.

Outbound capacity assumed to stay constant in future years. No adjustments made to inbound capacity.

Appendix E
Parking Study

December 19, 2014

San Francisco VA Medical Center Long Range Development Plan

Parking Study

Prepared for U.S. Department of Veterans Affairs

San Francisco VA Medical Center

Long Range Development Plan

Parking Study

Prepared for U.S. Department of Veterans Affairs

December 19, 2014

Prepared by Carol Shariat, TE

Prepared by Ryan Niblock

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B: Existing On-Site Parking Occupancy Survey

1.0 Introduction

This study has been conducted as part of an overall evaluation of existing parking conditions for the San Francisco Veterans Affairs Medical Center (SFVAMC) Fort Miley Campus, herein referred to as the "Project." As part of the Project, construction of new patient care, research, hoptel,[(1)] and administration uses (and associated parking facilities) is proposed to upgrade the SFVAMC facilities. To evaluate the parking activity associated with proposed Project uses, and to understand parking conditions in the surrounding Project area, this study examines existing on-site and on-street parking conditions surrounding the Project site.

1.1 Project Location

The existing SFVAMC Fort Miley Campus is a 29-acre site located at Fort Miley (within Lincoln Park) in northwestern San Francisco, California. The site is bounded on the north, east, and west sides by National Park Service lands (part of the Golden Gate National Recreation Area) and on the south side by Clement Street, with access points at 42nd Avenue/Clement Street and 43rd Avenue/Clement Street. The location of the Project site is identified in Figure 1.

1.2 Study Scope and Approach

The study evaluates on-site and on-street parking conditions within and surrounding the Project site. On-street parking conditions were evaluated within a six-block area bounded by Clement Street to the north, 39th Avenue to the east, Geary Boulevard to the south, and 45th Avenue to the west, all located within San Francisco's Richmond District. It should be noted that this parking study area was selected for analysis based on the City and County of San Francisco Planning Department's Transportation Impact Analysis Guidelines for Environmental Review (2002), which require that any parking analysis consider a parking area within a two-block radius of a project site. Parking facilities within the SFVAMC Fort Miley Campus were also evaluated. Parking conditions were assessed during weekday peak periods in the morning (9–11 AM), midday (1–3 PM), and evening (7–9 PM), because these time periods represent the busiest hours for parking demand.

(1) A hoptel is an overnight, shared lodging facility for eligible Veterans receiving healthcare services. This temporary lodging is available to Veterans who need to travel 50 or more miles from their homes to the Campus.

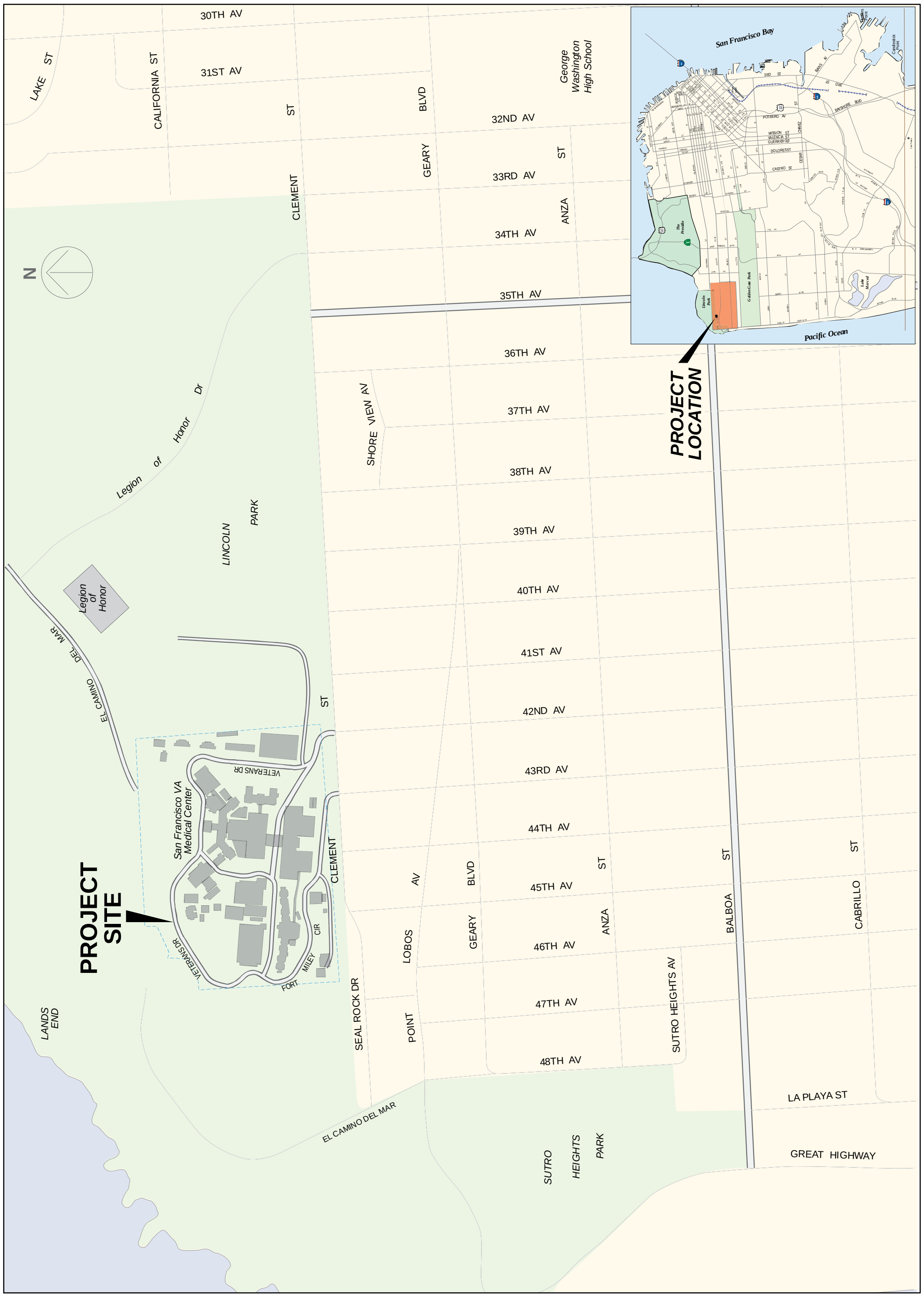

Figure 1: Project Location

2.0 Existing Conditions

This chapter describes the existing parking facilities in the Project study area, the data collected at these existing facilities, and existing parking occupancy.

2.1 Existing Facilities

2.1.1 On-Street Parking

On-street parking in the vicinity of the Project site consists primarily of unmetered parallel parking. Angled parking is provided along the north side of Geary Boulevard between 43rd Avenue and 42nd Avenue and between 41st Avenue and 40th Avenue, and along the south side of Point Lobos Avenue between 43rd Avenue and 42nd Avenue. It should be noted that the angled parking provided on the north side of Geary Boulevard and on the south side of Point Lobos Avenue between 43rd Avenue and 42nd Avenue is located adjacent to a Walgreens store, the only commercial land use in the Project study area. The angled parking spaces adjacent to Walgreens are 1-hour parking spaces between 8:00 AM and 6:00 PM, and can be used by all motorists (i.e., these spaces are not designated customer-only parking spaces). The Project site and Lincoln Park are located along the north side of Clement Street. All other on-street parking in the area is adjacent to residential land uses. The on-street parking study area (i.e., the area bounded by Clement Street to the north, 39th Avenue to the east, Geary Boulevard to the south, and 45th Avenue to the west) is illustrated in Figure 2.

The Project area, like most of the Richmond District, tends to have high on-street parking utilization, in part because the area has minimal parking restrictions and no residential parking permits. Restrictions that do apply within the parking study area are related to street sweeping, which occurs during the second and fourth weeks of each month, and are detailed in Figures 3a through 3d. Given that on-street parking within the Project study area is not marked, the number of on-street parking spaces has been estimated assuming 25 feet per vehicle. Based on this assumption, approximately 600 on-street parking spaces are currently provided in the parking study area. On-street parking capacity by block face is summarized in Figure 4.

2.1.2 On-site Parking

Existing on-site parking facilities consist of 10 surface lots (Lot B through Lot L) and two parking structures (Building 209 and Building 212).[2] In total, 1,253 on-site parking spaces are currently provided on the SFVAMC Fort Miley Campus. Existing on-site parking facilities are illustrated in Figure 5 and summarized in Table 1.

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(2) For purposes of this parking study, the existing Campus parking inventory is based on data summarized in the SFVAMC Fort Miley Campus Long Range Development Plan, which is based on baseline conditions of 2012.

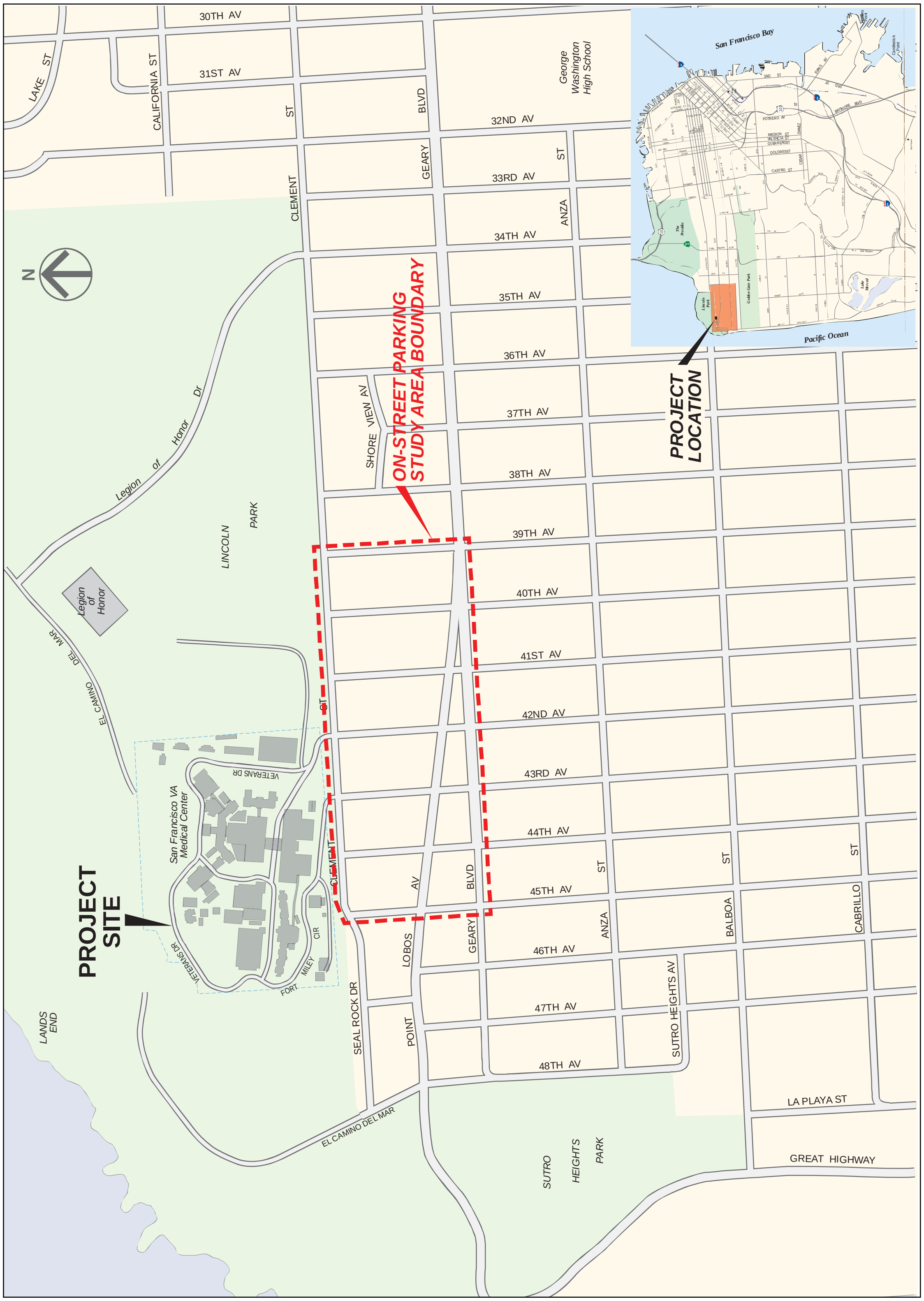

Figure 2: Existing On-Street Parking Study Area

Figure 3a: Existing On-Street Parking Restrictions – 2nd and 4th Tuesday of the Month

Figure 3b: Existing On-Street Parking Restrictions – 2nd and 4th Wednesday of the Month

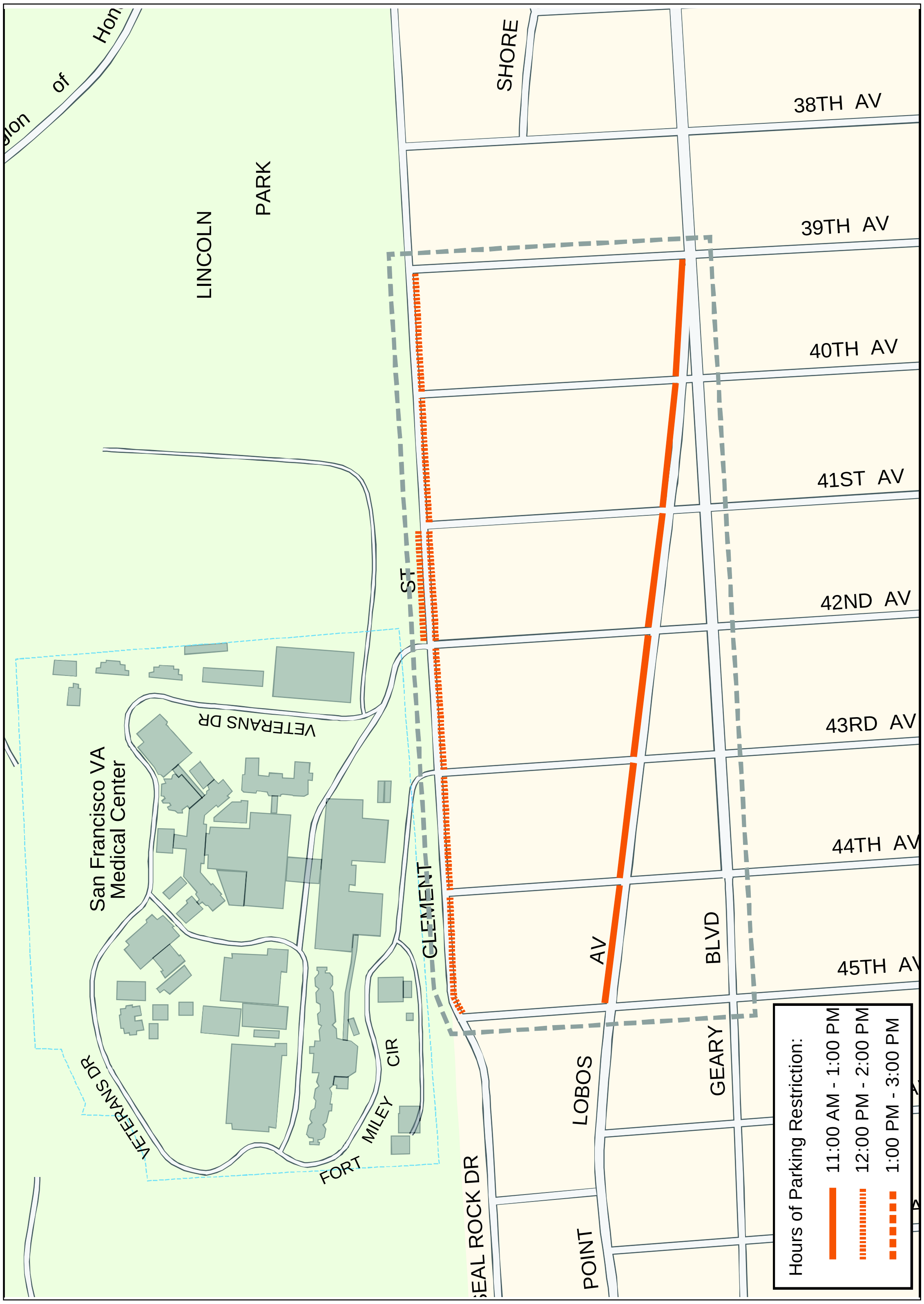

Figure 3c: Existing On-Street Parking Restrictions – 2nd and 4th Thursday of the Month

Figure 3d: Existing On-Street Parking Restrictions – 2nd and 4th Friday of the Month

Figure 4: Existing On-Street Parking Capacity

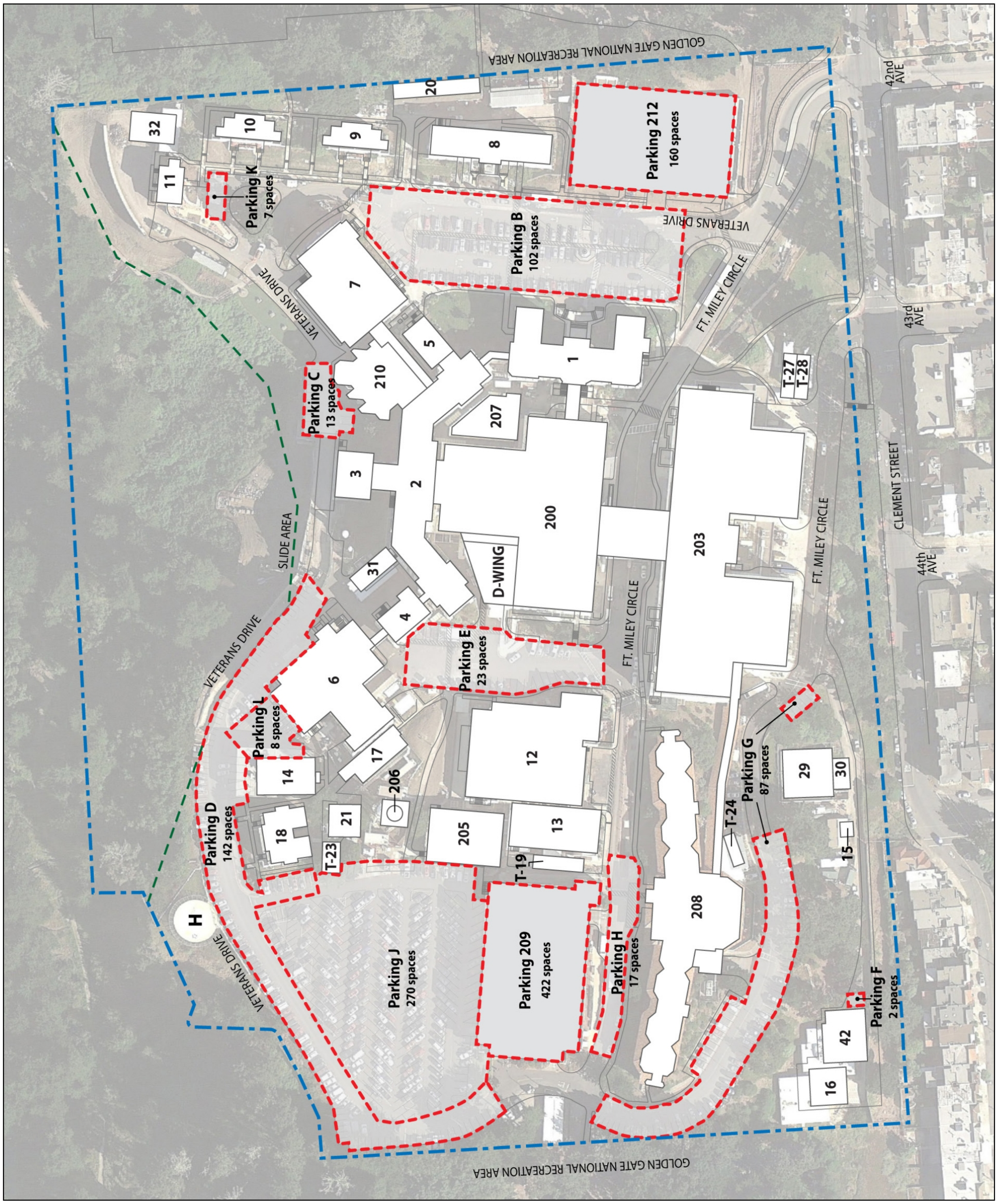

Figure 5: Existing On-Site Parking Facilities

Table 1: Existing On-Site Parking Supply

Facility	Parking Type	Function/User	Supply
Building 209	Structure	Patient/Employee	422
Building 212	Structure	Patient	160
Lot B	Surface lot	Patient/Visitor	102
Lot C	Surface lot	Employee	13
Lot D	Surface lot	GSA/Employee	142
Lot E	Surface lot	Patient	23
Lot F	Surface lot	Employee	2
Lot G	Surface lot	Employee	87
Lot H	Surface lot	Patient/Visitor	17
Lot J	Surface lot	Employee	270
Lot K	Surface lot	Employee	7
Lot L	Surface lot	Employee	8
Total			1,253

Source: SFVAMC Long Range Development Plan, 2014.
Notes: Reflects status as of 2012, as reported in the LRDP. Some facilities listed have since been permanently or temporarily closed or restriped/reconfigured as a result of construction activities, Americans with Disabilities Act compliance, or other factors.

As shown in Table 1, patients and visitors generally use parking facilities at Buildings 209 and 212 and Lots B, D, E, and H. Employees typically use parking facilities at Building 209 and Lots C, D, F, G, J, K, and L. General Services Administration (GSA) parking is provided in Lot D.

2.2 Data Collection

A parking occupancy survey was conducted on Tuesday, September 10, 2013, for on-street parking spaces in the Project vicinity and within on-site parking facilities. This date was chosen for evaluation because it is representative of typical weekday parking conditions in this area.(3) Parking conditions were analyzed on a weekday during the morning (9–11 AM), midday (1–3 PM), and evening (7–9 PM) peak periods. Parking occupancy refers to the number of cars parked in a specific facility or area during one period of observation, and is expressed as the percentage of the total supply that is occupied by parked cars. It should be noted that the results of the parking occupancy survey are representative of 1-day field observations, and that occupancy can vary slightly from day to day.

(3) The parking occupancy survey was conducted on a scheduled street cleaning day to account for the parking changes during these days. Because street cleaning occurs two of the four weeks each month, it does not necessarily represent unique conditions. Typically, the areawide parking demand does not change when street cleaning is scheduled, but motorists tend to shift their parking locations to unaffected streets. Thus, the survey data can be considered representative of conditions on non-street-sweeping days at an areawide level.

2.3 On-Street Parking Occupancy

On-street parking occupancy during the weekday morning, midday, and evening peak periods is illustrated in Figures 6a, 6b, and 6c. Detailed results of the parking occupancy survey are provided in Appendix A.

Based on the field observations conducted, it was determined that on-street parking is well used throughout the day, although particular occupancy percentages can vary depending on location and peak period. During the weekday morning peak period, on-street parking occupancy ranges between 80 percent and 100 percent along most block faces, with an average overall occupancy of 87 percent. Parking along the north side of Clement Street (i.e., on-street parking nearest the Project site) was observed to be the lowest in the parking study area; however, the relatively lower occupancy levels may be attributed to the street sweeping restrictions along this segment, shown previously in Figure 3a.

During the weekday midday peak period, on-street parking occupancy continued to range between 80 percent and 100 percent along most block faces, with an average overall occupancy of 90 percent. Parking spaces along the north side of Clement Street were observed to be nearly fully occupied, because the midday peak period occurs after the conclusion of street sweeping restrictions. Specifically, on-street parking spaces along the north side of Clement Street were found to be 100 percent occupied between 45th Avenue and 43rd Avenue, 92 percent occupied between 43rd Avenue and 42nd Avenue, and 93 percent occupied between 42nd Avenue and 39th Avenue.

During the weekday evening peak period, on-street parking occupancy levels are lower than during the weekday morning and midday peak periods, with many block faces experiencing occupancy levels below 80 percent. Average overall occupancy during the evening peak period was found to be 73 percent. On-street parking along Clement Street adjacent to the Project site remained relatively high, and lower occupancy levels were observed along Point Lobos Avenue and along roadways west of the Project site. Specifically, on-street parking spaces along the north side of Clement Street were found to be 100 percent occupied between 45th Avenue and 43rd Avenue, 85 percent occupied between 43rd Avenue and 42nd Avenue, and 53 percent occupied between 42nd Avenue and 39th Avenue.

Figure 6a: Existing On-Street Parking Occupancy – Morning Peak Period

Figure 6b: Existing On-Street Parking Occupancy – Midday Peak Period

Figure 6c: Existing On-Street Parking Occupancy – Evening Peak Period

2.4 On-Site Parking Occupancy

Based on the field surveys, on-site parking occupancy was observed to effectively reach capacity during both the weekday morning and midday peak periods. At those times, occupancies approaching 100 percent (or exceeding 100 percent, when including illegally parked vehicles) of capacity for striped parking spaces were recorded. (The efficiency gains from valet parking were not included.) These periods correspond with times when daily parking levels by employees, patients, and visitors are at their highest.

Field observations also indicated that valet parking in Building 209 is well utilized (at or near 100 percent occupancy, where most supplementary circulation aisle space is used by the valet parking operator to provide additional spaces), but less well utilized in Building 212. Overall parking occupancy at the Campus dropped substantially by the evening survey period, when vehicles are parked primarily by overnight patients and employees working overnight. Detailed results of the parking occupancy survey are provided in Appendix B.

Because of construction activities in Lot J related to Building 211 (the “Parking and Emergency Response Structure”), however, some of the on-site parking spaces normally available for use in Lots D, E, and J were instead cordoned off and unavailable at the time of the field observations. The installation of solar photovoltaic systems on the Campus at the time also required the closure of portions of Building 209. Other construction activities also reduced regular parking capacity in Lot G. SFVAMC typically provides valet parking during construction to offset some of this loss in parking capacity. The valet parking program in effect during construction of Building 211 encompasses Buildings 209 and 212 and provides approximately 210 additional spaces on the Campus.

Given the changes to parking supply on the Campus with construction of Building 211, supplementary data about on- and off-street parking utilization (before the start of construction) were consulted to obtain a more accurate picture of parking conditions at the Campus under “normal” (non-construction) conditions. Specifically, supplemental preconstruction data identifying on-site parking occupancy levels were obtained from a 2003 study prepared for a proposed new building on the Campus for the Northern California Institute for Research and Education (NCIRE) (VA, 2003). This information was used to help determine whether the observed occupancy levels in 2013 and 2014 represented “normal” (nonconstruction) conditions.

The 2003 NCIRE Building Study observed 99 percent occupancy of employee spaces (937 of 948 spaces) and 86 percent occupancy of patient and visitor spaces (229 of 266 spaces), for a combined

96 percent occupancy.[4] As a result, these occupancy levels generally corroborate the occupancy levels observed in 2013 and 2014. The 2013 and 2014 occupancy levels are slightly higher because of permanent changes in parking capacity that have occurred since 2003 and because of the temporary loss in parking capacity caused by construction activities on the Campus.

(4) At the time of the study in 2003, a total of 1,214 spaces were counted on the SFVAMC Fort Miley Campus: 948 employee spaces and 266 patient and visitor spaces.

3.0 Summary of Results

On-street parking spaces in the parking study area were 87 percent occupied during the morning peak period, 90 percent occupied during the midday peak period, and 73 percent occupied during the evening peak period. Specifically, on-street parking spaces directly adjacent to the Project site along the north side of Clement Street (i.e., between 45th Avenue and 42nd Avenue) were found to be between 93 percent and 100 percent occupied during the midday peak period, and between 85 percent and 100 percent occupied during the evening peak period.

On-site parking spaces were found to exhibit occupancy levels at or near 100 percent for the striped spaces during the morning and midday peak periods. Supplemental valet programs were also generally well utilized, but had capacity to accommodate additional vehicles. During the evening peak period, on-site parking spaces dropped considerably in contrast to on-street parking occupancy levels, which ranged from 85 to 100 percent occupied along Clement Street adjacent to the Project site and averaged 73 percent occupied throughout the entire Project study area.

4.0 References

U.S. Department of Veterans Affairs (VA). 2003 (February 10). VA Medical Center NCIRE Building Transportation Study—Draft. Prepared by CHS Consulting Group. San Francisco, CA.

June 11, 2014

San Francisco VA Medical Center
Long Range Development Plan
Final Parking Study – Technical Appendix

Appendix A
Existing On-Street Parking Occupancy Study

SF VAMC -- Parking Restrictions and Regulations

On-Street Parking Study Area Boundary

No Parking (Street Sweeping) 2nd/4th week of the month

TUESDAY
WEDNESDAY
THURSDAY
FRIDAY

11AM-1PM
12PM-2PM
1PM-3PM

AECOM

SF VAMC PARKING STUDY

On-Street Parking Occupancy Survey

Street	Side of Street	Supply (spaces)	Occupied Spaces			Percent Occupied			Notes
			AM (9-11am)	MIDDAY (1-3pm)	PM (7-9pm)	AM (9-11am)	MIDDAY (1-3pm)	PM (7-9pm)	
Clement Street									
between 45th Ave and Veteran's Dr (west)	north	24	4	24	24	17%	100%	100%	Street sweeping (AM)
between 45th and 44th Ave	south	6	6	6	4	100%	100%	67%	
between 44th and 43rd Ave	south	10	10	10	8	100%	100%	80%	
between Veteran's Dr (west) and Veteran's Dr (east)	north	13	2	12	11	15%	92%	85%	Street sweeping (AM)
between 43rd and 42nd Ave	south	7	7	7	7	100%	100%	100%	
between Veteran's Dr (east) and 39th Ave	north	43	38	40	23	88%	93%	53%	Street sweeping (AM)
between 42nd and 41st Ave	south	11	10	8	7	91%	73%	64%	
between 41st and 40th Ave	south	10	9	10	5	90%	100%	50%	PM (+1 Motorcycle)
between 40th and 39th Ave	south	8	8	9	8	100%	113%	100%	
Point Lobos Avenue									
between 45th and 44th Ave	north	5	5	4	4	100%	80%	80%	
	south	8	7	1	5	88%	13%	63%	
between 44th and 43rd Ave	north	7	7	3	2	100%	43%	29%	Bus Stop (Muni 38, 38AX, 38L)
	south	7	7	3	4	100%	43%	57%	
between 43rd and 42nd Ave	north	7	6	6	4	86%	86%	57%	
	south	18	16	8	6	89%	44%	33%	Walgreen's customer parking
between 42nd and 41st Ave	north	4	4	3	2	100%	75%	50%	Bus Stop (Muni 38, 38AX, 38L)
	south	4	4	4	3	100%	100%	75%	
between 41st and 40th Ave	north	9	8	9	2	89%	100%	22%	
	south	8	8	8	7	100%	100%	88%	
Geary Boulevard									
between 45th and 44th Ave	north	11	9	10	9	82%	91%	82%	
	south	6	5	5	6	83%	83%	100%	
between 44th and 43rd Ave	north	11	10	10	9	91%	91%	82%	
	south	10	10	6	10	100%	60%	100%	
between 43rd and 42nd Ave	north	15	14	15	11	93%	100%	73%	Walgreen's customer parking
	south	8	8	7	7	100%	88%	88%	
between 42nd and 41st Ave	north	7	7	7	7	100%	100%	100%	PM (+1 Motorcycle)
	south	0	0	0	1				Bus Stop (Muni 38, 38L)
between 41st and 40th Ave	north	14	12	14	8	86%	100%	57%	
	south	10	8	4	10	80%	40%	100%	
between 40th and 39th Ave	north	4	4	3	5	100%	75%	125%	Bus Stop (Muni 38, 38AX, 38L)
	south	4	4	3	4	100%	75%	100%	Bus Stop (Muni 38, 38L)
45th Avenue									
between Clement St and Point Lobos Ave	east	13	11	10	10	85%	77%	77%	
	west	12	10	12	11	83%	100%	92%	
between Point Lobos Ave and Geary Blvd	east	8	8	6	8	100%	75%	100%	
	west	9	8	10	6	89%	111%	67%	

SF VAMC PARKING STUDY

On-Street Parking Occupancy Survey

Street		Side of Street	Supply (spaces)	Occupied Spaces AM (9-11am)	Occupied Spaces MIDDAY (1-3pm)	Occupied Spaces PM (7-9pm)	Percent Occupied AM (9-11am)	Percent Occupied MIDDAY (1-3pm)	Percent Occupied PM (7-9pm)	Notes
44th Avenue										
	between Clement St and Point Lobos Ave	east	10	10	10	10	100%	100%	100%	
		west	12	10	12	9	83%	100%	75%	
	between Point Lobos Ave and Geary Blvd	east	6	6	6	5	100%	100%	83%	
		west	8	7	8	4	88%	100%	50%	
43rd Avenue										
	between Clement St and Point Lobos Ave	east	18	17	18	14	94%	100%	78%	PM (+1 Motorcycle)
		west	16	15	14	13	94%	88%	81%	AM (+1 Motorcycle) , PM (+1 Motorcycle)
	between Point Lobos Ave and Geary Blvd	east	4	4	3	4	100%	75%	100%	
		west	5	4	4	1	80%	80%	20%	
42nd Avenue										
	between Clement St and Point Lobos Ave	east	20	19	18	17	95%	90%	85%	
		west	18	17	17	12	94%	94%	67%	
	between Point Lobos Ave and Geary Blvd	east	2	2	2	2	100%	100%	100%	
		west	2	1	2	1	50%	100%	50%	
41st Avenue										
	between Clement St and Point Lobos Ave	east	20	20	20	16	100%	100%	80%	
		west	20	19	20	16	95%	100%	80%	PM (+2 Motorcycle)
	between Point Lobos Ave and Geary Blvd	east	2	2	2	2	100%	100%	100%	
		west	0	0	1	0				
40th Avenue										
	between Clement St and Geary Blvd/Point Lobos Ave	east	24	22	24	10	92%	100%	42%	
		west	20	16	19	10	80%	95%	50%	
39th Avenue										
	between Clement St and Geary Blvd	east	15	15	15	13	100%	100%	87%	AM (+1 Motorcycle), PM (+1 Motorcycle)
		west	25	23	24	20	92%	96%	80%	
	TOTAL Occupied		598	523	536	437	87%	90%	73%	
	TOTAL Available			75	62	161				

Appendix B
Existing On-Site Parking Occupancy Study

B A Y M E T R I C S

P A R K I N G   S T A L L   O C C U P A N C Y   S U M M A R Y

PROJECT NAME:	SFVAMC PARKING OCCUPANCY SURVEY		
LOCATION:	4150 CLEMENT STREET, SAN FRANCISCO, CALIFORN	SURVEY DATE:	9/10/2013
SURVEY TIME:	9-11 AM; 1-3PM; 7-9PM	SURVEY DAY:	TUESDAY
JURISDICTION:	SAN FRANCISCO	FILE:	3309083-PARKING

S U R V E Y   D A T A

FACILITY	TYPE	SUPPLY	OCCUPIED AM 9-10	AM 10-11	MD 1-2	MD 2-3	PM 7-8	PM 8-9
BUILDING 209 (GENERAL)	GENERAL	348	348	348	348	347	105	97
Partially closed for construction	VALET PARKING		149	149	136	133	0	0
	HANDICAP	4	4	4	4	4	2	2
	CHARGING STATION	2	2	2	2	2	3	3
	TOTAL (non-valet)	354	*354*	*354*	*354*	*353*	*110*	*102*
			100%	*100%*	*100%*	*100%*	*31%*	*29%*
	TOTAL (valet)		*149*	*149*	*136*	*133*	*0*	*0*
BUILDING 212 (GENERAL)	GENERAL	160	148	162	160	154	23	13
	VALET PARKING		12	20	27	9	0	0
	TOTAL (non-valet)	*160*	*148*	*162*	*160*	*154*	*23*	*13*
			93%	*101%*	*100%*	*96%*	*14%*	*8%*
	TOTAL (valet)		*12*	*20*	*27*	*9*	*0*	*0*
B. OPEN LOT (PATIENT & VISITOR)	GENERAL	30	30	30	30	30	20	27
	HANDICAP	45	45	45	45	45	8	11
	TOTAL (non-valet)	*75*	*75*	*75*	*75*	*75*	*28*	*38*
			100%	*100%*	*100%*	*100%*	*37%*	*51%*
C. CURB PARKING	AUTHORIZED	13	13	13	12	13	3	4
	ILLEGAL PARKED		3	4	4	4	3	10
	TOTAL (non-valet)	*13*	*16*	*17*	*16*	*17*	*6*	*14*
			123%	*131%*	*123%*	*131%*	*46%*	*108%*
D. OPEN LOT (EMPLOYEE)	GENERAL	132	130	132	131	118	30	25
Lot L and some spaces at NE corner of Lot J also included in this count	GSA	15	15	15	17	16	11	12
	VAN POOL	3	3	3	3	3	0	0
	RV SPACE	3	1	3	3	3	2	2
	ILLEGAL PARKED		4	4	6	3	1	1
	TOTAL (non-valet)	*153*	*153*	*157*	*160*	*143*	*44*	*40*
			100%	*103%*	*105%*	*93%*	*29%*	*26%*
E. OPEN LOT (EMPLOYEE)	GENERAL	9	9	9	9	9	6	8
Partially closed / reconfigured for construction	HANDICAP	20	20	20	20	20	10	11
	ILLEGAL PARKED		3	1	3	4	3	2
	TOTAL (non-valet)	*29*	*32*	*30*	*32*	*33*	*19*	*21*
			110%	*103%*	*110%*	*114%*	*66%*	*72%*
F. OPEN LOT	CLOSED FOR CONSTRUCTION							
G. OPEN LOT (EMPLOYEE)	GENERAL	49	49	48	48	43	26	27
Partially closed for construction	HANDICAP	1	1	1	1	1	0	0
	TOTAL (non-valet)	*50*	*50*	*49*	*49*	*44*	*26*	*27*
			100%	*98%*	*98%*	*88%*	*52%*	*54%*
H. CURB PARKING (PATIENT)	WHITE CURVE	16	16	16	16	16	7	5
	MRI	2	2	2	2	1	0	0
	TOTAL (non-valet)	*18*	*18*	*18*	*18*	*17*	*7*	*5*
			100%	*100%*	*100%*	*94%*	*39%*	*28%*
J. OPEN LOT	CLOSED FOR CONSTRUCTION; Some spaces at NE corner still available for use counted with Lot D							
K. OPEN LOT	CLOSED FOR TEMPORARY MODULAR SPACE							
L. OPEN LOT	COUNTED WITH LOT D							
TOTAL (non-valet)		852	846	862	864	836	263	260
			99%	101%	101%	98%	31%	31%
TOTAL (valet)			161	169	163	142	0	0

TEL: (510) 232 - 1271 FAX: (510) 232 - 1272

Adjustments and notes by AECOM.

Supply may not exactly match LRDP existing inventory due to restriping / reconfiguration or closure of some spaces due to construction activities, ADA compliance, or other factors.

Appendix F
Project Travel Demand

ITE Land Use	ITE Trip Rate: Weekday Daily	ITE Trip Rate: Weekday AM Peak Hour	ITE Trip Rate: Weekday PM Peak Hour	Unit	In / Out Rate: Weekday AM Peak Hour In	In / Out Rate: Weekday AM Peak Hour Out	In / Out Rate: Weekday PM Peak Hour In	In / Out Rate: Weekday PM Peak Hour Out
Motel (320)	5.63	0.45	0.47	room	36%	64%	54%	46%
Hospital (610)	13.22	1.12	0.93	1,000 GSF	59%	41%	42%	58%
Nursing Home (620)	7.60	0.55	0.74	1,000 GSF	71%	29%	52%	48%
Office Building (710)	11.03	1.55	1.49	1,000 GSF	88%	12%	17%	83%
Medical-Dental Office	36.13	2.39	3.57	1,000 GSF	79%	21%	28%	72%
Research & Developm	8.11	1.22	1.07	1,000 GSF	83%	17%	15%	85%

AVO	1.08

Alternative 1 Near-Term (Phase 1)

Phase	Proposed Action	Action	Gross Area (sq ft): New SF	Demo SF	Net New	ITE Land Use	Independent Variable		Vehicle-Trips: Daily	Weekday AM Peak Hour: In	Out	Total	Weekday PM Peak Hour: In	Out	Total	Person-Trips: Daily	Weekday AM Peak Hour: In	Out	Total	Weekday PM Peak Hour: In	Out	Total
1.1	Building 211: Emergency Operations	Construction	5,000		5,000																	
1.2	Trailer 17	Removal		(1,700)	(1,700)	Research & D	(1.7)	1,000 GSF	(14)	(2)	(0)	(2)	(0)	(2)	(2)	(15)	(2)	(0)	(2)	(0)	(2)	(2)
	Building 41: Research	Construction	14,200		14,200	Research & D	14.2	1,000 GSF	115	14	3	17	2	13	15	124	16	3	19	2	14	16
1.3	Buildings 5 and 7	Seismic Retrofit																				
1.4	Buildings 9 and 10	Seismic Retrofit																				
	Building 22: Hoptel	Construction	8,700		8,700	Motel (320)	8.0	room	45	1	2	4	2	2	4	49	1	2	4	2	2	4
1.5	Buildings 209 and 211: Parking Gara	Construction																				
1.6	Building 203: C-Wing Extension (Gro	Construction	7,100		7,100	Hospital (610)	7.1	1,000 GSF	94	5	3	8	3	4	7	101	5	4	9	3	4	7
1.7	Building 200: Expansion (Operating F	Construction	5,300		5,300	Hospital (610)	5.3	1,000 GSF	70	4	2	6	2	3	5	76	4	3	6	2	3	5
1.8	Building 20	Demolition		(2,300)	(2,300)																	
	Building 24: Mental Health Clinical Ex	Construction	15,600		15,600	Hospital (610)	15.6	1,000 GSF	206	10	7	17	6	8	15	223	11	8	19	7	9	16
1.9	Building 18	Demolition		(9,700)	(9,700)	Research & D	(9.7)	1,000 GSF	(79)	(10)	(2)	(12)	(2)	(9)	(10)	(85)	(11)	(2)	(13)	(2)	(10)	(11)
	Building 14	Demolition		(6,400)	(6,400)	Research & D	(6.4)	1,000 GSF	(52)	(6)	(1)	(8)	(1)	(6)	(7)	(56)	(7)	(1)	(8)	(1)	(6)	(7)
	Building 21	Demolition		(1,700)	(1,700)	Research & D	(1.7)	1,000 GSF	(14)	(2)	(0)	(2)	(0)	(2)	(2)	(15)	(2)	(0)	(2)	(0)	(2)	(2)
	Trailer 23	Removal		(900)	(900)	Research & D	(0.9)	1,000 GSF	(7)	(1)	(0)	(1)	(0)	(1)	(1)	(8)	(1)	(0)	(1)	(0)	(1)	(1)
	Structure 206: Water Tower	Installation																				
	Structure 206: Water Tower	Removal																				
	Building 40: Research	Construction	110,000		110,000	Research & D	110.0	1,000 GSF	892	111	23	134	18	100	118	963	120	25	145	19	108	127
1.10	Building 207: Expansion (IT Support	Construction	7,000		7,000	Office Building	7.0	1,000 GSF	77	10	1	11	2	9	10	83	10	1	12	2	9	11
1.11	Trailer 31	Removal		(1,500)	(1,500)	Hospital (610)	(1.5)	1,000 GSF	(20)	(1)	(1)	(2)	(1)	(1)	(1)	(21)	(1)	(1)	(2)	(1)	(1)	(2)
	Building 43:Research and Admin.	Construction	15,000		15,000	Research & D	15.0	1,000 GSF	122	15	3	18	2	14	16	131	16	3	20	3	15	17
1.12	Trailer 36: New Modular	Installation	2,200		2,200	Research & D	2.2	1,000 GSF	18	2	0	3	0	2	2	19	2	0	3	0	2	3
1.13	Building 23: Mental Health Research	Construction	15,000		15,000	Research & D	15.0	1,000 GSF	122	15	3	18	2	14	16	131	16	3	20	3	15	17
1.14	Building 203: Extension (Psychiatric I	Construction	1,200		1,200	Hospital (610)	1.2	1,000 GSF	16	1	1	1	0	1	1	17	1	1	1	1	1	1
1.15	Trailer 24	Removal		(1,000)	(1,000)	Medical-Denta	(1.0)	1,000 GSF	(36)	(2)	(1)	(2)	(1)	(3)	(4)	(39)	(2)	(1)	(3)	(1)	(3)	(4)
	Building 208: Extension (Community	Construction	10,000		10,000	Nursing Home	10.0	1,000 GSF	76	4	2	6	4	4	7	82	4	2	6	4	4	8
1.16	Building 8	Seismic Retrofit																				
	Building 1	Seismic Retrofit																				
	Building 6	Seismic Retrofit																				
1.17	Building 12	Demolition		(38,900)	(38,900)	Research & D	(38.9)	1,000 GSF	(315)	(39)	(8)	(47)	(6)	(35)	(42)	(341)	(43)	(9)	(51)	(7)	(38)	(45)
	Total		**216,300**	**-64,100**	**152,200**				**1,316**	**129**	**38**	**167**	**33**	**115**	**148**	**1,421**	**140**	**41**	**180**	**36**	**124**	**159**

Land Use	Person-Trips: Weekday Daily	Weekday PM
R&D	850	112
Hotel	49	4
Office	83	11
Hospital	356	24
Nursing Home	82	8
Total	**1,421**	**159**

Alternative 1 Long-Term (Phase 2)

Phase	Proposed Action	Action	Gross Area (sq ft): New SF	Demo SF	Net New	ITE Land Use	Independent Variable		Vehicle-Trips: Daily	Weekday AM Peak Hour: In	Out	Total	Weekday PM Peak Hour: In	Out	Total	Person-Trips: Daily	Weekday AM Peak Hour: In	Out	Total	Weekday PM Peak Hour: In	Out	Total
2.1	Blding 213 - Clinical Addition	Construction	170,000		170,000	Medical-Denta	170.0	1,000 GSF	6,142	321	85	406	170	437	607	6,633	347	92	439	184	472	655
	Total		**170,000**	**0**	**170,000**				**6,142**	**321**	**85**	**406**	**170**	**437**	**607**	**6,633**	**347**	**92**	**439**	**184**	**472**	**655**

Alternative 1 Total			**386,300**	**-64,100**	**322,200**				**7,458**	**450**	**123**	**573**	**203**	**552**	**755**	**8,055**	**487**	**133**	**619**	**219**	**596**	**815**

Land Use	Person-Trips: Weekday Daily	Weekday PM
R&D		
Hotel		
Office		
Hospital	6,633	655
Nursing Home		
Total	**6,633**	**655**

Alternative 3 Near-Term (Phase 1)

Phase	Proposed Action	Action	Gross Area (sq ft): New SF	Demo SF	Net New	ITE Land Use	Independent Variable		Vehicle-Trips: Daily	Weekday AM Peak Hour: In	Out	Total	Weekday PM Peak Hour: In	Out	Total	Person-Trips: Daily	Weekday AM Peak Hour: In	Out	Total	Weekday PM Peak Hour: In	Out	Total
1.1	Building 211: Emergency Operations	Construction	5,000		5,000																	
1.2	Trailer 17	Removal		(1,700)	(1,700)	Research & D	(1.7)	1,000 GSF	(14)	(2)	(0)	(2)	(0)	(2)	(2)	(15)	(2)	(0)	(2)	(0)	(2)	(2)
	Building 41: Research	Construction	14,200		14,200	Research & D	14.2	1,000 GSF	115	14	3	17	2	13	15	124	16	3	19	2	14	16
1.3	Buildings 5 and 7	Seismic Retrofit																				
1.4	Buildings 9 and 10	Seismic Retrofit																				
	Building 22: Hoptel	Construction	8,700		8,700	Motel (320)	8.0	room	45	1	2	4	2	2	4	49	1	2	4	2	2	4
1.5	Buildings 209 and 211: Parking Gara	Construction																				
1.6	Building 203: C-Wing Extension (Gro	Construction	7,100		7,100	Hospital (610)	7.1	1,000 GSF	94	5	3	8	3	4	7	101	5	4	9	3	4	7
1.7	Building 200: Expansion (Operating F	Construction	5,300		5,300	Hospital (610)	5.3	1,000 GSF	70	4	2	6	2	3	5	76	4	3	6	2	3	5
1.8	Building 20	Demolition		(2,300)	(2,300)																	
	Building 24: Mental Health Clinical Ex	Construction	15,600		15,600	Hospital (610)	15.6	1,000 GSF	206	10	7	17	6	8	15	223	11	8	19	7	9	16
1.9	Building 18	Demolition		(9,700)	(9,700)	Research & D	(9.7)	1,000 GSF	(79)	(10)	(2)	(12)	(2)	(9)	(10)	(85)	(11)	(2)	(13)	(2)	(10)	(11)
	Building 14	Demolition		(6,400)	(6,400)	Research & D	(6.4)	1,000 GSF	(52)	(6)	(1)	(8)	(1)	(6)	(7)	(56)	(7)	(1)	(8)	(1)	(6)	(7)
	Building 21	Demolition		(1,700)	(1,700)	Research & D	(1.7)	1,000 GSF	(14)	(2)	(0)	(2)	(0)	(2)	(2)	(15)	(2)	(0)	(2)	(0)	(2)	(2)
	Trailer 23	Removal		(900)	(900)	Research & D	(0.9)	1,000 GSF	(7)	(1)	(0)	(1)	(0)	(1)	(1)	(8)	(1)	(0)	(1)	(0)	(1)	(1)
	Structure 206: Water Tower	Installation																				
	Structure 206: Water Tower	Removal																				
	Building 40: Research	Construction	110,000		110,000	Research & D	110.0	1,000 GSF	892	111	23	134	18	100	118	963	120	25	145	19	108	127
1.10	Building 207: Expansion (IT Support	Construction	7,000		7,000	Office Building	7.0	1,000 GSF	77	10	1	11	2	9	10	83	10	1	12	2	9	11
1.11	Trailer 31	Removal		(1,500)	(1,500)	Hospital (610)	(1.5)	1,000 GSF	(20)	(1)	(1)	(2)	(1)	(1)	(1)	(21)	(1)	(1)	(2)	(1)	(1)	(2)
	Building 43:Research and Admin.	Construction	15,000		15,000	Research & D	15.0	1,000 GSF	122	15	3	18	2	14	16	131	16	3	20	3	15	17
1.12	Trailer 36: New Modular	Installation	2,200		2,200	Research & D	2.2	1,000 GSF	18	2	0	3	0	2	2	19	2	0	3	0	2	3
1.13	Building 23: Mental Health Research	Construction	15,000		15,000	Research & D	15.0	1,000 GSF	122	15	3	18	2	14	16	131	16	3	20	3	15	17
1.14	Building 203: Extension (Psychiatric I	Construction	1,200		1,200	Hospital (610)	1.2	1,000 GSF	16	1	1	1	0	1	1	17	1	1	1	1	1	1
1.15	Trailer 24	Removal		(1,000)	(1,000)	Medical-Denta	(1.0)	1,000 GSF	(36)	(2)	(1)	(2)	(1)	(3)	(4)	(39)	(2)	(1)	(3)	(1)	(3)	(4)
	Building 208: Extension (Community	Construction	10,000		10,000	Nursing Home	10.0	1,000 GSF	76	4	2	6	4	4	7	82	4	2	6	4	4	8
1.16	Building 8	Seismic Retrofit																				
	Building 1	Seismic Retrofit																				
	Building 6	Seismic Retrofit																				
1.17	Building 12	Demolition		(38,900)	(38,900)	Research & D	(38.9)	1,000 GSF	(315)	(39)	(8)	(47)	(6)	(35)	(42)	(341)	(43)	(9)	(51)	(7)	(38)	(45)
	Total		**216,300**	**-64,100**	**152,200**				**1,316**	**129**	**38**	**167**	**33**	**115**	**148**	**1,421**	**140**	**41**	**180**	**36**	**124**	**159**

Land Use	Person-Trips: Weekday Daily	Weekday PM
R&D	850	112
Hotel	49	4
Office	83	11
Hospital	356	24
Nursing Home	82	8
Total	**1,421**	**159**

Alternative 3 Long-Term (Phase 2)

Phase	Proposed Action	Action	Gross Area (sq ft): New SF	Demo SF	Net New	ITE Land Use	Independent Variable		Vehicle-Trips: Daily	Weekday AM Peak Hour: In	Out	Total	Weekday PM Peak Hour: In	Out	Total	Person-Trips: Daily	Weekday AM Peak Hour: In	Out	Total	Weekday PM Peak Hour: In	Out	Total
2.1	Ambulatory Care Center	Construction	140,000		140,000	Medical-Denta	140.0	1,000 GSF	5,058	264	70	335	140	360	500	5,463	285	76	361	151	389	540
	Total		**140,000**	**0**	**140,000**				**5,058**	**264**	**70**	**335**	**140**	**360**	**500**	**5,463**	**285**	**76**	**361**	**151**	**389**	**540**

Alternative 3 Total			**356,300**	**-64,100**	**292,200**				**6,374**	**394**	**108**	**502**	**173**	**474**	**647**	**6,884**	**425**	**116**	**542**	**187**	**512**	**699**

Land Use	Person-Trips: Weekday Daily	Weekday PM
R&D	0	0
Hotel		
Office		
Hospital	5,463	540
Nursing Home		
Total	**5,463**	**540**

Appendix G
Project Vehicle Parking Demand and Planning Code Requirements

ITE Land Use	ITE Parking Rate: Weekday Peak Hour	ITE Parking Rate: Unit	Adjustments: SF Guidelines Auto Share	Adjustments: SF Guidelines AVO	Equivalent Rate
Motel (320)	0.71	room	54%	1.59	0.41
University / College (550)	1.2	1,000 GSF	53%	1.41	0.69
Hospital (610)	3.7	1,000 GSF	54%	1.83	2.16
Nursing Home (620)	0.98	1,000 GSF	54%	1.59	0.57
Office Building (701)	2.47	1,000 GSF	45%	1.06	1.20
Medical-Dental Office Building (720)	3.2	1,000 GSF	54%	1.83	1.87
MB: Medical-Dental Office Building (720)	3.2	room	61%	1.96	2.09
MB: University / College (550)	1.2	1,000 GSF	69%	1.45	0.89

Land Use	Planning Code Requirement: Rate	Minimum	Unit
Offices or stud	1.0	5.0	1,000 GSF
Medical or de	3.3	5.0	1,000 GSF
Residential ca	1.0	10.0	1,000 GSF

Alternative 1 Near-Term (Phase 1)

Phase	Proposed Action	ITE Land Use	Independent Variable		Parking Demand	Land Use	Independent Variable		Parking Demand
1.1	Building 211: Emergency Operations Center / Parking Garage								
1.2	Trailer 17	University / College (550)	(1.7)	1,000 GSF	(1)	Offices or stud	(1.7)	1,000 GSF	
	Building 41: Research	University / College (550)	14.2	1,000 GSF	9	Offices or stud	12.5	1,000 GSF	13
1.3	Buildings 5 and 7								
1.4	Buildings 9 and 10								
	Building 22: Hoptel	Motel (320)	8.0	room	3	Residential ca	8.7	1,000 GSF	0
1.5	Buildings 209 and 211: Parking Garage Extensions								
1.6	Building 203: C-Wing Extension (Gro	Hospital (610)	7.1	1,000 GSF	14	Medical or de	7.1	1,000 GSF	24
1.7	Building 200: Expansion (Operating I	Hospital (610)	5.3	1,000 GSF	11	Medical or de	5.3	1,000 GSF	18
1.8	Building 20								
	Building 24: Mental Health Clinical E	Hospital (610)	15.6	1,000 GSF	31	Medical or de	15.6	1,000 GSF	52
1.9	Building 18	University / College (550)	(9.7)	1,000 GSF	(6)	Offices or stud	(9.7)	1,000 GSF	
	Building 14	University / College (550)	(6.4)	1,000 GSF	(4)	Offices or stud	(6.4)	1,000 GSF	
	Building 21	University / College (550)	(1.7)	1,000 GSF	(1)	Offices or stud	(1.7)	1,000 GSF	
	Trailer 23	University / College (550)	(0.9)	1,000 GSF	(1)	Offices or stud	(0.9)	1,000 GSF	
	Structure 206: Water Tower								
	Structure 206: Water Tower								
	Building 40: Research	University / College (550)	110.0	1,000 GSF	70	Offices or stud	91.3	1,000 GSF	91
1.10	Building 207: Expansion (IT Support	Office Building (701)	7.0	1,000 GSF	8	Offices or stud	7.0	1,000 GSF	7
1.11	Trailer 31	Hospital (610)	(1.5)	1,000 GSF	(3)	Medical or de	(1.5)	1,000 GSF	0
	Building 43:Research and Admin.	University / College (550)	15.0	1,000 GSF	10	Offices or stud	15.0	1,000 GSF	15
1.12	Trailer 36: New Modular	University / College (550)	2.2	1,000 GSF	1	Offices or stud	2.2	1,000 GSF	0
1.13	Building 23: Mental Health Research	University / College (550)	15.0	1,000 GSF	10	Offices or stud	15.0	1,000 GSF	15
1.14	Building 203: Extension (Psychiatric	Hospital (610)	1.2	1,000 GSF	2	Medical or de	1.2	1,000 GSF	0
1.15	Trailer 24	Medical-Dental Office Building (720)	(1.0)	1,000 GSF	(2)	Medical or de	(1.0)	1,000 GSF	0
	Building 208: Extension (Community	Nursing Home (620)	10.0	1,000 GSF	5	Residential ca	10.0	1,000 GSF	10
1.16	Building 8								
	Building 1								
	Building 6								
1.17	Building 12	University / College (550)	(38.9)	1,000 GSF	(25)	Offices or stud	(38.9)	1,000 GSF	(39)
	Total				**132**				**206**

Alternative 1 Long-Term (Phase 2)

Phase	Proposed Action	ITE Land Use	Independent Variable		Parking Demand	Land Use	Independent Variable		Parking Demand
2.1	Blding 213 - Clinical Addition	Medical-Dental Office Building (720)	170.0	1,000 GSF	295	Medical or de	170.0	1,000 GSF	567
	Total				**295**				**567**

Alternative 1 Total	**426**	**773**

Alternative 3 Near-Term (Phase 1)

Phase	Proposed Action	ITE Land Use	Independent Variable		Parking Demand	Land Use	Independent Variable		Parking Demand
1.1	Building 211: Emergency Operations Center / Parking Garage								
1.2	Trailer 17	University / College (550)	(1.7)	1,000 GSF	(1)	Offices or stud	(1.7)	1,000 GSF	
	Building 41: Research	University / College (550)	14.2	1,000 GSF	9	Offices or stud	12.5	1,000 GSF	13
1.3	Buildings 5 and 7								
1.4	Buildings 9 and 10								
	Building 22: Hoptel	Motel (320)	8.0	room	3	Residential ca	8.7	1,000 GSF	0
1.5	Buildings 209 and 211: Parking Garage Extensions								
1.6	Building 203: C-Wing Extension (Gro	Hospital (610)	7.1	1,000 GSF	14	Medical or de	7.1	1,000 GSF	24
1.7	Building 200: Expansion (Operating I	Hospital (610)	5.3	1,000 GSF	11	Medical or de	5.3	1,000 GSF	18
1.8	Building 20								
	Building 24: Mental Health Clinical E	Hospital (610)	15.6	1,000 GSF	31	Medical or de	15.6	1,000 GSF	52
1.9	Building 18	University / College (550)	(9.7)	1,000 GSF	(6)	Offices or stud	(9.7)	1,000 GSF	
	Building 14	University / College (550)	(6.4)	1,000 GSF	(4)	Offices or stud	(6.4)	1,000 GSF	
	Building 21	University / College (550)	(1.7)	1,000 GSF	(1)	Offices or stud	(1.7)	1,000 GSF	
	Trailer 23	University / College (550)	(0.9)	1,000 GSF	(1)	Offices or stud	(0.9)	1,000 GSF	
	Structure 206: Water Tower								
	Structure 206: Water Tower								
	Building 40: Research	University / College (550)	110.0	1,000 GSF	70	Offices or stud	91.3	1,000 GSF	91
1.10	Building 207: Expansion (IT Support	Office Building (701)	7.0	1,000 GSF	8	Offices or stud	7.0	1,000 GSF	7
1.11	Trailer 31	Hospital (610)	(1.5)	1,000 GSF	(3)	Medical or de	(1.5)	1,000 GSF	0
	Building 43:Research and Admin.	University / College (550)	15.0	1,000 GSF	10	Offices or stud	15.0	1,000 GSF	15
1.12	Trailer 36: New Modular	University / College (550)	2.2	1,000 GSF	1	Offices or stud	2.2	1,000 GSF	0
1.13	Building 23: Mental Health Research	University / College (550)	15.0	1,000 GSF	10	Offices or stud	15.0	1,000 GSF	15
1.14	Building 203: Extension (Psychiatric	Hospital (610)	1.2	1,000 GSF	2	Medical or de	1.2	1,000 GSF	0
1.15	Trailer 24	Medical-Dental Office Building (720)	(1.0)	1,000 GSF	(2)	Medical or de	(1.0)	1,000 GSF	0
	Building 208: Extension (Community	Nursing Home (620)	10.0	1,000 GSF	5	Residential ca	10.0	1,000 GSF	10
1.16	Building 8								
	Building 1								
	Building 6								
1.17	Building 12	University / College (550)	(38.9)	1,000 GSF	(25)	Offices or stud	(38.9)	1,000 GSF	(39)
	Total				**132**				**206**

Alternative 3 Long-Term (Phase 2)

Phase	Proposed Action	ITE Land Use	Independent Variable		Parking Demand	Land Use	Independent Variable		Parking Demand
2.1	Ambulatory Care Center	MB: Medical-Dental Office Building (720)	140.0	room	271	Medical or de	140.0	1,000 GSF	467
						Offices or stud	0.0	1,000 GSF	0
	Total				**271**				**467**

Alternative 3 Total	**403**

Appendix H
On-Site Circulation Optional Recommendations (Memorandum)

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Memorandum

To	Allan Federman, COR & Project Manager	Pages	5
Subject	Final SFVAMC Fort Miley Campus On-site Circulation Optional Recommendations		
From	Carol Shariat, TE, Senior Transportation Engineer, and Anthony Mangonon, Transportation Planner		
Cc	Ross Goddard, Tim Erney, Kelsey Bennett, and David Reel		
From	June 11, 2014		

This memo provides suggested design elements and recommendations for consideration by the U.S. Department of Veterans Affairs (VA) as part of the long-term planning for the San Francisco Veterans Affairs Medical Center (SFVAMC) Fort Miley Campus. This memo suggests potential changes to elements such as bike, pedestrian, and vehicular routes; parking; gates; and bus stops that could be considered as VA continues to design circulation and related infrastructure on the Campus. In addition, potential travel demand management strategies are included for VA's consideration.

#	Design Element	Optional Recommendations
1	**Bike routes**	• Bike routes should be clearly defined and marked within the internal roadway system, and bike roadway signs should be placed where clearly visible to both bicyclists and motor vehicles for visitors/employees using alternative modes of transportation. Class I bike paths or Class II bike lanes within the site should be considered to increase alternative modes of travel and decrease automobile use. Ideally, bike circulation within the Campus should be limited and cyclists should be encouraged to exit the roadways and access bike parking facilities as early as possible. • To minimize the conflict between bicyclists and visitors/patients, cyclists should not be allowed to ride along the open space areas where elderly or sick patients are walking or where passengers are alighting from bus, taxi, or public drop-off facilities.

#	Design Element	Optional Recommendations
2	**Pedestrian routes**	• Pedestrian routes should be well defined and identifiable within the internal roadway system and parking areas. Safe pedestrian paths of travel should be clearly marked with way-finding signage to and from and within the parking and drop-off areas. In addition, the preferred pedestrian access points to and from the Campus should be clearly demarcated.
3	**Fort Miley Circle—mixture of drop-off activities** It is understood that the new traffic circle proposed at the west end of Fort Miley Circle will be accessed by Muni buses, shuttle buses, taxis and public visitors dropping off and picking up patients, reconfigured from the existing configuration. This is desirable because the traffic circle is located near the Patient Welcome Center entrance and is a convenience for visitors. However, this arrangement may cause congestion and conflicts to arise because of the parking maneuvers of many different vehicles. Muni or shuttle bus services may have difficulty circulating and accessing their designated bus stop areas because a variety of public vehicle or taxi parking activities may be occurring in a small space. This may cause buses to be delayed and obstructed from exiting the traffic circle.	• Before the traffic circle is designed, a layout should be developed that optimizes the pick-up/drop-off area for transit, taxis, shuttles, and patients. Pick-up/drop-off zones should be established for each user within the circle with well-designed signage for each designated area. • The traffic circle radius should be designed such that Muni or other large buses can easily maneuver around the circle.
4	**90-degree parking on Veterans Drive** Veterans Drive will be required to carry reasonably high traffic volumes at certain periods of the day, and to accommodate shuttle bus movements, taxis, delivery trucks, and fire access. Given that reversing maneuvers out of 90-degree parking typically take about 20–30 seconds, there is the potential for delays to these vehicles.	To alert drivers that slowdowns may occur as they enter parking areas, the following measures could be implemented: • Speed bumps could be installed ahead of the first perpendicular spaces on Campus, such as before Parking Area G and south of Parking Lot B, to reduce vehicle speeds in these areas. • Signs should be installed informing vehicles that perpendicular parking spaces are located ahead and that vehicles may be backing up. • Angled parking could also be considered; however, a reduction in spaces would result.

#	Design Element	Optional Recommendations
5	**Intersection of Fort Miley Circle/Veterans Drive/Parking Lot B** This intersection will accommodate a complex mixture of traffic movements to/from several directions. Traffic can veer to/from Veterans Drive or Parking Lot B from the same general location off the Fort Miley Circle roadway. Both of these access roads provide two-way access and intersect with two-way traffic movements accessing the traffic circle.	• It is recommended that priority be given to movements along Fort Miley Circle to ensure that the potentially congested traffic circle area can clear of traffic as quickly as possible. Thus, a stop sign should be added on Veterans Drive for vehicles traveling southbound on Veterans Drive.
6	**Golden Gate National Recreation Area (GGNRA) vehicle access driveway** In addition to the complex number of traffic movements associated with the proposed intersection of Fort Miley Circle/Veterans Drive, the only vehicle access route into the GGNRA is the driveway connected to this intersection located south of Lot 212. Furthermore, this driveway increases the complexity and potential confusion at this intersection.	• It is recommended that consideration be given to removing this driveway access from the site and constructing a new driveway access point off of Clement Street for GGNRA vehicles at a location east of the Campus or a new driveway located off of Camino del Mar. This would separate the truck movements from other traffic movements at this intersection, reducing confusion. • It is recommended that VA work closely with the GGNRA to understand the volume and types of trucks that must access this driveway each day to determine the full extent of the impact of this driveway if it remains within the Campus. Truck turning templates should be developed to confirm whether trucks will be unable to complete this movement in one maneuver and to ascertain how many maneuvers this movement may require.
7	**Employee gates** A gate-control system is being considered for installation south of Parking Lot 209 and northeast of Building 6 to restrict these sections of Veterans Drive to VA employees only. It is possible that the delays experienced by employees at the “gates” may result in the spill-back of traffic queues onto the public sections of Veterans Drive, which may delay shuttle bus services and other vehicle movements and block access to/from parking spaces.	• It is recommended that the “gates” be installed in a location that allows two to four vehicles to queue, and thus does not block the access to other internal roadways or disrupt shuttle bus and other traffic movements. • Signs should be installed that clearly designate employee parking versus visitor/patient parking. • Gate mechanisms and operating plans should be developed so that traffic continues to flow quickly forward and result in less queuing.

#	Design Element	Optional Recommendations
8	**Shuttle bus stops** Shuttle bus stops will be provided between Buildings 208 and 209 and within the traffic circle outside the Patient Welcome Center.	• Shuttle bus stops should be clearly designated and separated from taxi zones or drop-off areas to ensure that taxis or other vehicles do not spill over into the shuttle bus stop areas. • Pedestrian safety should be prioritized in any locations where they are required to cross the street to access stops. Safe, clearly signed and controlled crossing facilities should be provided. • Traffic calming measures such as speed bumps should be put in place to ensure particularly low-speed environments at bus stops and crossing facilities where pedestrians circulate.
9	**Travel demand management (TDM) strategies** It is recommended that a TDM strategy for the SFVAMC Fort Miley Campus be developed to reduce the car dependency of employees of and visitors to the site and lower parking requirements for personal vehicles. This may have the ability to be successful in reducing the volume of traffic accessing the site, improving circulation efficiency and encouraging use of transit, shuttles, and carpooling.	A TDM strategy for the Campus should be developed. To be most successful, it is recommended that the strategy concentrate on targeting employees who are regular visitors to the site. Employees should specifically be encouraged to use alternatives instead of driving personal vehicles. A SFVAMC directive should be established that makes it easy to use transit/walk/bike or carpool to travel to/from the Campus each day. With mobility options, employees and visitors are more inspired to change their travel and behavior patterns. Programs could include: • Car-share vehicles located on-site. • Designated secure bike parking and shower/change room facilities. • Shuttle buses to surrounding commercial districts at lunch and dinner times. • Internal bike-share and car-share program available for employees to travel to meetings or lunch destinations. • Transit subsidies for employees.

Appendix I

Construction Traffic and Parking Management Plan (Memorandum)

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Memorandum

To	Allan Federman, Project Manager/COR	Pages	22
Subject	San Francisco Veterans Affairs Medical Center (Fort Miley Campus) Long Range Development Plan—Construction Traffic and Parking Management Plan		
From	Anthony Mangonon Carol Shariat, PE		
Cc	Kelsey Bennett, MPA, LEED-AP David Reel Tim Erney, AICP, PTP		
Date	December 19, 2014		

This memorandum constitutes the proposed traffic and parking management plan for the Fort Miley Campus (Campus) of the San Francisco Veterans Affairs Medical Center (SFVAMC) during construction of the proposed Long Range Development Plan (LRDP). This plan identifies haul truck routes that would be used and estimates the haul truck and construction worker traffic that would be generated during the construction phases. This plan also identifies overflow parking and other management strategies that would accommodate the estimated temporary traffic and parking demand generated by construction activities and any associated temporary loss of parking supply on the Campus.[1]

Three development scenarios have been analyzed in the programmatic environmental review of the LRDP:

- Alternative 1: SFVAMC Fort Miley Campus Buildout Alternative 1 (Preferred Alternative)

  Alternative 1 proposes 554,452 gross square feet of net new development at the Campus, along with seismic upgrades to various existing structures on the Campus in one short-term phase (Phase 1) and one long-term phase (Phase 2). In terms of habitable building inventory, Alternative 1 proposes 386,300 square feet of new construction and demolition of 64,100 square feet in existing facilities, resulting in 322,200 gross square feet of net new development.

- Alternative 2: SFVAMC Fort Miley Campus Buildout Alternative 2

  Alternative 2 is identical to Alternative 1 in terms of the total amount and type of operational space proposed, but would involve different phasing and implementation schedules for some components of the LRDP, resulting in a different, longer construction schedule.

- Alternative 3: SFVAMC Fort Miley Campus Plus Mission Bay Campus Alternative

  Alternative 3 retains all of the short-term (Phase 1) components of Alternative 1, but would locate all of the long-term (Phase 2) components off Campus at an unknown site, to be determined and purchased later by VA, within the Mission Bay area of San Francisco (the “Mission Bay Campus”).

[1] Overflow parking and other management strategies recommended in this memorandum would likely be included as construction-traffic and parking-management mitigation measures in the traffic, circulation, and parking section of the Transportation Impact Study and Final Environmental Impact Statement (EIS) for the SFVAMC LRDP.

This plan focuses primarily on Alternative 1 and Alternative 2, but also includes a supplementary section discussing Alternative 3.

Construction-Related Haul Truck Routes

Haul trucks traveling to and from the Campus during construction would be expected to use truck traffic routes established by the San Francisco Municipal Transportation Agency (SFMTA, i.e., Muni). SFMTA has developed the *San Francisco Truck Traffic Routes* map (SFMTA, 2010), a conceptual route map of truck traffic routes in San Francisco, for inclusion by the City and County of San Francisco (City) in its next general plan update. Based on this map, large trucks would be expected to use the following routes:

- *From points north of the Campus:* United States Highway 101 (U.S. 101) → State Route 1 (SR 1) (Veterans Boulevard/Park Presidio Boulevard) → Geary Boulevard → Point Lobos Avenue → 42nd Avenue or 43rd Avenue

- *From points south of the Campus:* Interstate 280 (I-280) → SR 1 (Junipero Serra Boulevard/19th Avenue/Crossover Drive/Park Presidio Boulevard) → Geary Boulevard → Point Lobos Avenue → 42nd Avenue or 43rd Avenue; or, alternatively, U.S. 101 (Bayshore Freeway/Central Freeway) → Mission Street → U.S. 101 (Van Ness Avenue) → Geary Boulevard → Point Lobos Avenue → 42nd Avenue or 43rd Avenue

- *From points east of the Campus:* Interstate 80 (I-80) → U.S. 101 (Central Freeway) → Mission Street → U.S. 101 (Van Ness Avenue) → Geary Boulevard → Point Lobos Avenue → 42nd Avenue or 43rd Avenue

These routes are illustrated in **Figure 1**.

Recommended Measures

Only a combination of these three identified haul routes should be used for LRDP construction-related activities. SFVAMC and its construction contractors should monitor arrivals to ensure that haul trucks do not queue up and idle on the Campus or on adjacent or nearby streets. An adequate monitoring and queue-abatement program would be necessary to limit potential construction-related traffic, air, noise, vibration, and visual impacts on workers, visitors, neighbors, and business personnel at the site and in the vicinity.

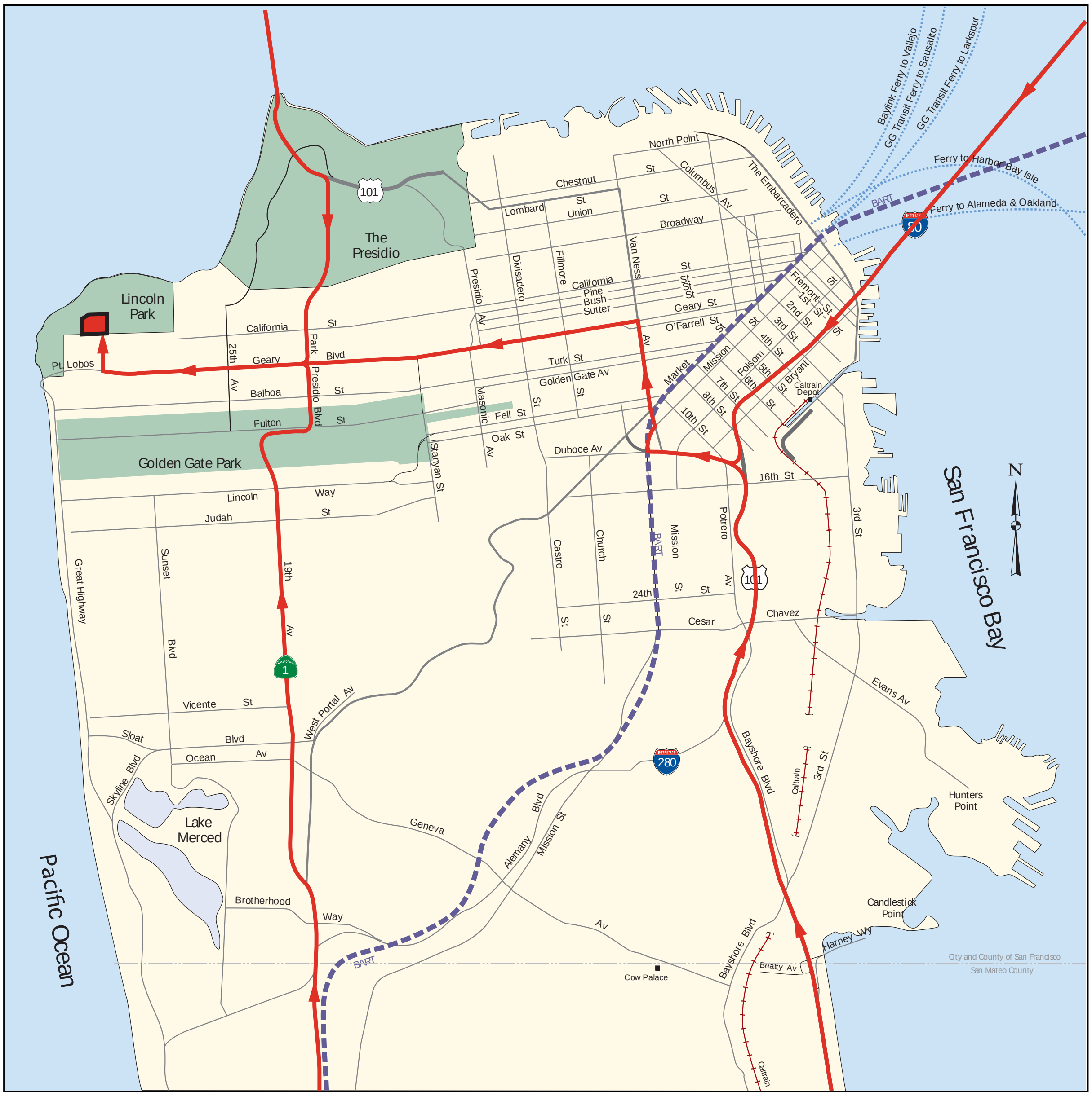
Construction-Related Traffic and Parking Demand

Construction-Period Parking Capacity

To implement some of the subphases identified in the LRDP, portions of the on-Campus parking areas may require temporary conversion for various construction-related activities such as excavation, staging of equipment and materials, and installation of temporary modular structures for a limited time period. These activities would result in a temporary loss of on-site parking capacity. When combined with increased parking demand on the site from construction workers, vendors, and other construction-related traffic, they would generally intensify the parking situation at the Campus.

To alleviate some of the loss in parking capacity during on-Campus construction SFVAMC would provide valet parking at other on-site facilities, such as Building 209 and Building 212. This solution has been effectively implemented for other construction projects. To better accommodate existing parking demand through on-site capacity, the LRDP proposes to continue providing valet parking until the end of construction of Subphase 1.9 (i.e., through December 2018). This measure would partially offset the temporary loss in parking capacity and reduce spillover effects into the surrounding neighborhood.

Figure 1: Haul Truck Routes



Source: Data compiled by AECOM, 2014.

As described previously, Alternative 1 and Alternative 2 would be equivalent in terms of gross square footage, building locations, and intended building function in the LRDP horizon year (2030), but would have different construction phasing plans, schedules, and temporary modular swing-space programs. **Table 1** and **Table 2** summarize the construction schedules and changes in on-site parking capacity at the Campus for each subphase of the LRDP for Alternative 1 and Alternative 2, respectively.

Table 1: On-Site Parking Capacity by Subphase (Alternative 1)

Phase	Building	Action	Parking Change (spaces)			Construction Schedule	
			Temporary		Permanent		
			Loss	Gain	Net Gain after Completion	Start	Finish
1.1	Building 211: *Emergency Operations Center/Parking Garage*	Construction	(277)	180[1]	200	Jul 2013	Jul 2014
1.2	Trailer 17	Removal				Dec 2013	Jan 2014
	Building 41: *Research*	Construction				Jan 2014	Mar 2015
1.3	Buildings 5 and 7	Retrofit				Mar 2014	May 2015
1.4	Buildings 9 and 10	Retrofit				Mar 2014	May 2015
	Building 22: *Hoptel*	Construction				Mar 2014	May 2015
1.5	Buildings 209 and 211: *Parking Garage Extensions*	Construction	(29)	–	250	Mar 2015	Mar 2016
1.6	Building 203: *C-Wing Extension (Ground-Floor Patient Welcome Center)/Drop-Off Area with Canopy Structure*	Construction				Jun 2015	Aug 2016
1.7	Building 200: *Expansion (Operating Room D-Wing)*	Construction				Jun 2015	Jun 2016
1.8	Building 20	Demolition				Aug 2015	Sep 2015
	Building 24: *Mental Health Clinical Expansion*	Construction				Sep 2015	Oct 2016
1.9	Building 18	Demolition				Sep 2015	Dec 2015
	Building 14	Demolition				Sep 2015	Dec 2015
	Building 21	Demolition				Sep 2015	Dec 2015
	Trailer 23	Removal				Sep 2015	Dec 2015
	Structure 206: *Water Tower*	Installation				Sep 2015	Dec 2015
	Structure 206: *Water Tower*	Removal				Sep 2015	Dec 2015
	Building 40: *Research*	Construction				Dec 2015	Dec 2018
1.10	Building 207: *Expansion (IT Support Space)*	Construction				Nov 2015	Jan 2017
1.11	Trailer 31	Removal				Nov 2015	Dec 2015
	Building 43: *Research and Administration*	Construction				Dec 2015	Feb 2017
1.12	Trailer 36: *New Modular*	Installation				Jun 2016	Sep 2016
1.13	Building 23: *Mental Health Research Expansion*	Construction				Oct 2016	Dec 2017
1.14	Building 203: *Extension (Psychiatric Intensive Care Unit C-Wing)*	Construction				Dec 2016	Jun 2018
1.15	Trailer 24	Removal				Dec 2016	Feb 2017
	Building 208: *Extension (Community Living Center/ National Cardiac Device Surveillance Center)*	Construction				Feb 2017	Aug 2018
1.16	Buildings 1, 6, and 8	Retrofit				Jul 2017	Mar 2019
1.17	Building 12	Demolition	(23)	–	–	Sep 2019	Aug 2020
2.1	Building 213: *Clinical Addition Building*	Construction				Mar 2024	Mar 2026
	Modular Swing Space (multiple locations)[2]		(102)	–	–	Apr 2016	Mar 2019

Sources: VA, 2014; data compiled by AECOM, 2014.

Notes:

IT = information technology

Changes to on-site parking capacity shown only for the associated subphases in which the change first occurs.

1 Temporary valet parking to be in effect until the end of Subphase 1.9 in December 2018.

2 The construction schedule cited for swing space represents the full period of time that the parking loss would be in effect, and accounts for installation, (temporary) operation, and removal of the modular structures. Swing space for Alternative 1 would be situated in four different locations as indicated in Figure 3-2 of the LRDP:

- Parking Lot B
- Near Parking Lot K
- At Temporary Structure T-31 (Home-Based Primary Care), near Building 4 (Research/Administration)
- West of the Patient Welcome Center, between Building 200 (Ambulatory Care/Clinical Support) and Building 203 (Inpatient Hospital/Diagnostics/Specialty Care)

Table 2: On-Site Parking Capacity by Subphase (Alternative 2)

Phase	Building	Action	Parking Change (spaces)			Construction Schedule	
			Temporary		Permanent		
			Loss	Gain	Net Gain after Completion	Start	Finish
1.1	Building 211: *Emergency Operations Center/Parking Garage*	Construction	(277)	180[1]	200	Jul 2013	Jul 2014
1.2	Trailer 17	Removal				Dec 2013	Jan 2014
	Building 41: *Research*	Construction				Jan 2014	Mar 2015
1.3	Buildings 5 and 7	Retrofit				Mar 2014	May 2015
1.4	Buildings 9 and 10	Retrofit				Mar 2014	May 2015
	Building 22: *Hoptel*	Construction				Mar 2014	May 2015
1.5	Buildings 209 and 211: *Parking Garage Extensions*	Construction	(29)	–	250	Mar 2015	Mar 2016
1.6	Building 203: *C-Wing Extension (Ground-Floor Patient Welcome Center)/Drop-Off Area with Canopy Structure*	Construction				Jun 2015	Aug 2016
1.7	Building 200: *Expansion (Operating Room D-Wing)*	Construction				Jun 2015	Jun 2016
1.8	Building 20	Demolition				Aug 2015	Sep 2015
	Building 24: *Mental Health Clinical Expansion*	Construction				Sep 2015	Oct 2016
1.9	Building 18	Demolition				Sep 2015	Dec 2015
	Building 14	Demolition				Sep 2015	Dec 2015
	Building 21	Demolition				Sep 2015	Dec 2015
	Trailer 23	Removal				Sep 2015	Dec 2015
	Structure 206: *Water Tower*	Installation				Sep 2015	Dec 2015
	Structure 206: *Water Tower*	Removal				Sep 2015	Dec 2015
	Building 40: *Research*	Construction				Dec 2015	Sep 2018
1.10	Building 207: *Expansion (IT Support Space)*	Construction				Nov 2015	Jan 2017
1.11	Trailer 31	Removal				Nov 2015	Dec 2015
	Building 43: *Research and Administration*	Construction				Dec 2015	Feb 2017
1.12	Trailer 36: *New Modular*	Installation				Jun 2016	Sep 2016
1.13	Building 23: *Mental Health Research Expansion*	Construction				Oct 2016	Dec 2017
1.14	Building 203: *Extension (Psychiatric Intensive Care Unit C-Wing)*	Construction				Dec 2016	Jun 2018
1.15	Trailer 24	Removal				Dec 2016	Feb 2017
	Building 208: *Extension (Community Living Center/ National Cardiac Device Surveillance Center)*	Construction				Feb 2017	Aug 2018
1.16	Building 12	Demolition	(23)	–	–	Nov 2018	Oct 2019
2.1	Building 8	Retrofit				Oct 2020	Dec 2021
2.2	Building 1	Retrofit				Oct 2020	Jun 2022
2.3	Building 6	Retrofit				Jun 2022	Feb 2024
2.4	Building 213: *Clinical Addition Building*	Construction				Mar 2024	Mar 2026
	Modular Swing Space (single location)[2]					Sep 2020	Feb 2024

Sources: VA, 2014; data compiled by AECOM, 2014.

Notes:

IT = information technology

Changes to on-site parking capacity shown only for the associated subphase in which the change first occurs.

1 Temporary valet parking to be in effect until the end of Subphase 1.9 in December 2018.

2 The construction schedule cited for swing space accounts for installation, (temporary) operation, and removal of the modular structures. Swing space for Alternative 2 would be situated at the location of the current Building 12 and future Building 213, as indicated in Figure 3-6 of the LRDP.

Figure 2 and **Figure 3** illustrate the Phase 1 plan and Phase 2 plan, respectively, of Alternative 1. **Figure 4** and **Figure 5** illustrate the Phase 1 plan and Phase 2 plan, respectively, of Alternative 2. Referenced from the LRDP, these figures illustrate LRDP projects on the Campus by building/action type (new construction, expansion, retrofit, modular, and demolition/removal) and indicate the locations of temporary modular swing space.

Construction Traffic Estimation Methodology

Detailed construction plans have not yet been developed for most of the subphases identified in the LRDP. As a result, estimates of traffic during construction of various subphases are currently unavailable. To prepare this construction traffic and parking management plan, and to perform necessary air quality and noise analyses for the LRDP Final EIS, AECOM estimated construction traffic based on the California Emissions Estimator Model (CalEEMod) Version 2013.2.2, the accepted model for modeling construction-related air quality and greenhouse gas emissions in California (CAPCOA 2013). This methodology is discussed in more detail below.

Estimates of trips by both vendors/haul trucks and construction workers were developed separately based on the CalEEMod methodology, combined with some general assumptions:

- *Building envelope (volume):* Estimates of building envelope (volume) were developed by taking the building footprint and multiplying by the estimated building height, based on the number of stories and standard building height estimation factors from the Council on Tall Buildings and Urban Habitat.

- *Haul truck capacity:* Each haul truck was assumed to have a capacity of 20 cubic yards, a standard size.

- *Construction duration:* Estimates were developed on a monthly basis, and construction was assumed to take place Monday through Friday.

Vendor/Haul Truck Trips

Estimates of vendor/haul truck traffic were developed for four unique construction scenarios:

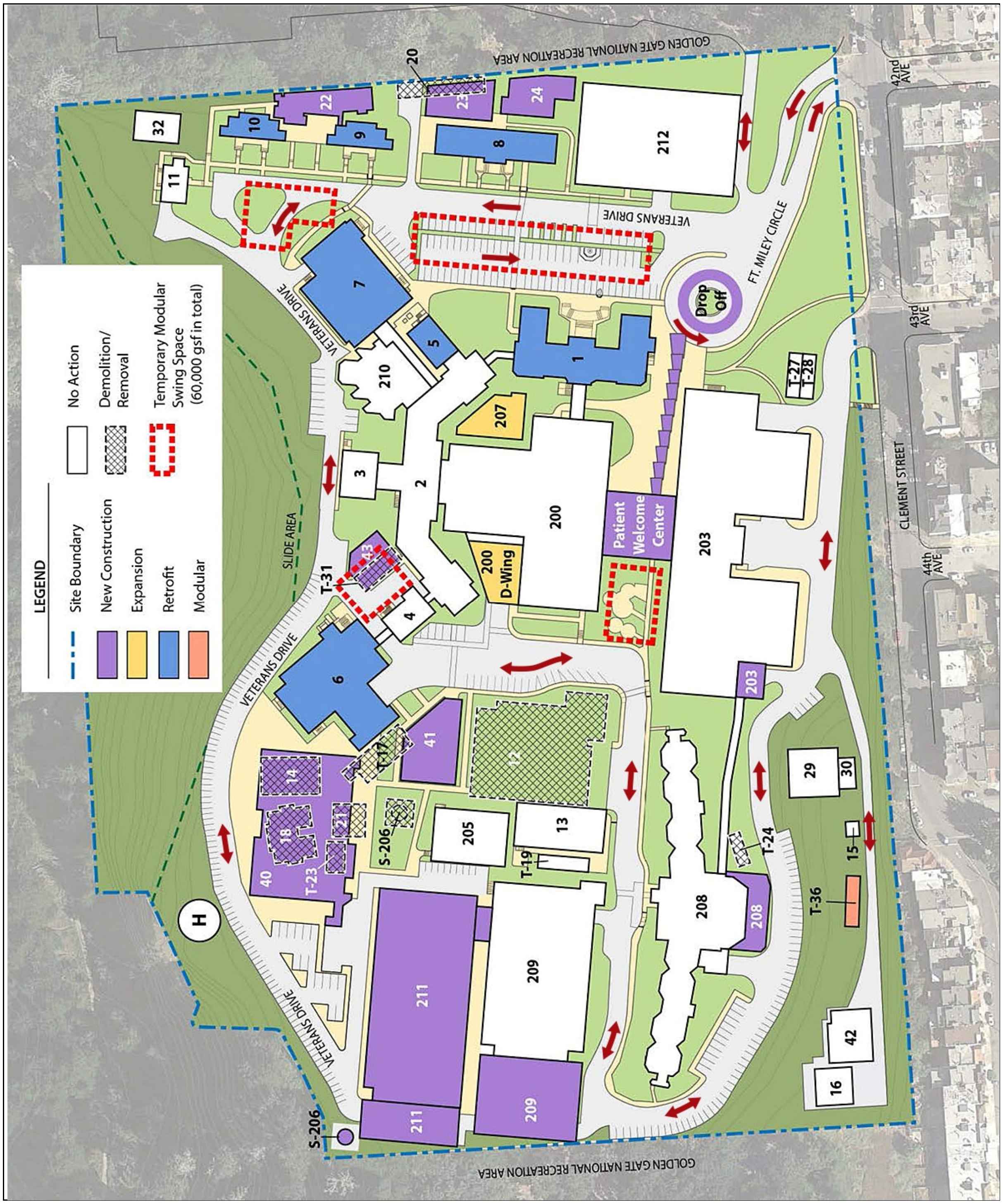
- *Demolition:* Total demolition debris was assumed to be 25 percent of the building envelope, with haul trucks to export debris arriving throughout the demolition phase.

- *Seismic retrofit:* Haul truck activity for seismic retrofit projects was assumed to be equivalent to haul truck activity for demolition (i.e., removing most of the interior of the building). This is a conservative assumption, given some unknown factors related to design and construction activities.

- *Construction:* Haul truck activity for construction projects was calculated according to CalEEMod standard vendor-truck trip rates (0.1069 trip per day per unit for residential uses and 0.1639 trip per day per 1,000 square feet for commercial/retail and office/industrial uses).[2]

[2] Although the proposed hoptel (Building 22) could in some ways be considered a residential land use, the estimates of construction traffic conservatively assumed that construction of the hoptel would generate haul truck activity at trip rates equivalent to construction of commercial/retail or office/industrial uses. Consequently, all projects in the LRDP were assumed to generate haul truck activity at the commercial/retail and office/industrial rate of 0.1639 trip per day per 1,000 square feet.

Figure 2: Alternative 1, Phase 1 Plan



Source: VA, 2014.

Figure 3: Alternative 1, Phase 2 Plan

Source: VA, 2014.

Figure 4: Alternative 2, Phase 1 Plan

Source: VA, 2014.

Figure 5: Alternative 2, Phase 2 Plan

Source: VA, 2014.

- *Removal or installation:* Haul truck activity for removal or installation of trailers or nonbuilding structures such as water towers was assumed to be equivalent to haul truck activity for demolition or construction of permanent buildings. This is a conservative assumption because most trailers would likely be prefabricated units delivered to the site in a mostly finished state. Average trailer height was assumed to be approximately 12 feet.

Additional adjustments to the construction traffic estimates were made to account for major earthwork/grading (cut-and-fill) activities associated with Building 23 (Mental Health Research Expansion), Building 40 (Research), and Building 213 (Clinical Addition Building).

Construction Worker Trips

Estimates of construction traffic generated by workers traveling to and from the site were developed using CalEEMod standard methodologies for each of six different construction phases:

- demolition,
- site preparation,
- grading,
- building construction,
- architectural coating, and
- asphalt paving.

For the demolition, site preparation, grading, and asphalt paving phases, construction worker trips were estimated based on the number of pieces of heavy-duty construction equipment required (excavators, graders, bulldozers, concrete/industrial saws, tractors/loaders/backhoes, scrapers, pavers, cement/mortar mixers, and rollers and other paving equipment). This was estimated for each project according to CalEEMod tables that relate equipment needs to approximate project acreage. A worker-to-equipment ratio of 1.25 was assumed, and each worker was assumed to make two trips per day (one commuting to the site and one returning home).

For the building construction phase, construction worker trips were estimated according to CalEEMod standard construction worker vehicle-trip factors[3]:

- Multifamily residential: 0.72 trip per day per unit;
- Single-family residential: 0.36 trip per day per unit;
- Commercial or retail: 0.32 trip per day per 1,000 square feet; and
- Office or industrial: 0.42 trip per day per 1,000 square feet.

For the architectural coating phase, construction worker trips were assumed to be approximately 20 percent of construction worker trips during the building construction phase, based on CalEEMod recommended guidelines.

In accordance with CalEEMod methodology, the duration of each of the six phases for a given project was estimated according to the approximate total acreage involved.

3 Although the proposed hoptel (Building 22) could in some ways be considered a residential land use, the estimates of construction traffic assumed that construction of the hoptel would generate construction worker trips at trip rates equivalent to construction of office or industrial uses, consistent with the estimation of haul truck activity. Consequently, all projects in the LRDP were assumed to generate haul truck activity at the office or industrial rate of 0.42 trip per 1,000 square feet.

Construction Traffic Estimates: Alternative 1

Table 3 and **Table 4** summarize the estimated traffic volume generated by LRDP construction activities on the Campus for Phase 1 and Phase 2, respectively, of Alternative 1, according to the methodology described in the preceding subsection.

As shown in **Table 3** and **Table 4**, vendor and haul truck traffic under Alternative 1 would peak at 36 vehicles (72 trips) per day in December 2015 for Phase 1 and April 2024 for Phase 2. Construction worker trips under Alternative 1 would peak at 72 vehicles (144 trips) per day in December 2015. As a result, construction activities under Alternative 1 would generate their maximum traffic volumes in December 2015, with as many as 108 vehicles (216 trips) in one day. Construction traffic in other months would generally be much lower, with most months generating a maximum traffic volume that would not exceed 50 vehicles (100 trips) in one day.

As summarized in **Table 1**, the pending completion of Building 211 (Emergency Operations Center/Parking Garage) in July 2014 would increase parking capacity on the Campus by 200 spaces. The increased parking capacity is intended primarily to accommodate future growth on the Campus and existing spillover demand in the surrounding residential neighborhoods; however, the completion of Building 211 would likely be able to accommodate most of the temporary parking demand generated by construction-related activities.

In addition, it is anticipated that the actual maximum parking demand generated by construction-related activities on any one day during the peak construction-traffic month (December 2015) would be substantially less than 100 vehicles. In particular, although most construction workers would require parking spaces for the entire day, vendor trucks may require parking spaces for only short periods of time to deliver materials or equipment or perform contracted tasks. This may allow for some potential to share parking spaces during the day as turnover occurs. Haul trucks importing or exporting soil or debris would remain at the Campus for only short periods of time, and therefore would not be expected to require dedicated parking spaces.

SFVAMC would continue to provide valet parking until the end of Subphase 1.9 (December 2018), providing an additional 180 spaces of parking capacity even after Building 211 has been completed but before the full LRDP has been implemented. Therefore, there would likely be sufficient on-site parking capacity to accommodate the estimated temporary increase in parking demand that would result from construction-related activities. The subsequent (March 2015) completion of the Building 209 and Building 211 extensions under Subphase 1.5 would further increase on-site parking capacity by 250 spaces, which would likely be sufficient to accommodate the parking demand generated by construction of subsequent subphases of the LRDP.

Recommended Measures

It is recommended that SFVAMC conduct supplementary surveys of parking occupancy several weeks after completion of Building 211 to determine the utilization of the new parking structure and overall occupancy of on-site facilities throughout the day. The survey should also consider on-street parking in the surrounding area to estimate how much spillover demand has been "recaptured" on the site as a result of the increased parking supply. As construction plans for specific subphases of the LRDP are developed, construction contractors should work with SFVAMC to compare its own estimates of construction-related traffic and parking demand to the estimated parking capacity and surveyed occupancy levels, to determine whether temporary measures are required to mitigate expected parking constraints.

Table 3: Construction-Related Traffic Volumes (Alternative 1, Phase 1)

Vehicle-Trip Type	2013											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Vendor/Haul Truck Trips							2	2	2	2	2	4
Worker Trips							20	4	4	4	4	4
Total							22	6	6	6	6	8

Vehicle-Trip Type	2014											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Vendor/Haul Truck Trips	6	6	8	16	16	14	14	14	14	14	14	14
Worker Trips	26	10	50	66	16	30	10	10	10	10	10	10
Total	32	16	58	82	32	44	24	24	24	24	24	24

Vehicle-Trip Type	2015											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Vendor/Haul Truck Trips	14	10	20	10	10	14	14	19	33	33	53	72
Worker Trips	12	24	58	92	36	76	44	54	98	82	102	144
Total	26	34	78	102	46	90	58	73	131	115	155	216

Vehicle-Trip Type	2016											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Vendor/Haul Truck Trips	44	34	34	34	34	32	30	30	26	42	30	30
Worker Trips	120	102	76	78	92	74	88	70	80	84	70	104
Total	164	136	110	112	126	106	118	100	106	126	100	134

Vehicle-Trip Type	2017											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Vendor/Haul Truck Trips	26	28	28	28	28	28	28	28	62	62	58	58
Worker Trips	78	80	64	64	64	64	74	90	114	106	116	96
Total	104	108	92	92	92	92	102	118	176	168	174	154

Vehicle-Trip Type	2018											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Vendor/Haul Truck Trips	58	58	58	56	56	54	54	54	54	34	34	34
Worker Trips	96	96	98	114	116	108	108	88	98	64	64	40
Total	154	154	156	170	172	162	162	142	152	98	98	74

Vehicle-Trip Type	2019											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Vendor/Haul Truck Trips	34								10	10	10	10
Worker Trips	48	26							10	10	10	10
Total	82	26							20	20	20	20

Vehicle-Trip Type	2020											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Vendor/Haul Truck Trips	10	10	10	10	10	10	10					
Worker Trips	10	10	10	10	10	10	10					
Total	20	20	20	20	20	20	20					

Source: Data compiled by AECOM, 2014.

Note: Values are shown as one-way trips (e.g., a value of "10" represents five trips to the site and five trips from the site each day).

Table 4: Construction-Related Parking Demand (Alternative 1, Phase 2)

Vehicle-Trip Type	2024											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Vendor/Haul Truck Trips			44	72	28	28	28	28	28	28	28	28
Worker Trips			18	82	72	72	72	72	72	72	72	72
Total			62	154	100	100	100	100	100	100	100	100
Vehicle-Trip Type	**2025**											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Vendor/Haul Truck Trips	28	28	28	28	28	28	28	28	28	28	28	28
Worker Trips	72	72	72	72	72	72	72	72	72	72	72	72
Total	100	100	100	100	100	100	100	100	100	100	100	100
Vehicle-Trip Type	**2026**											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Vendor/Haul Truck Trips	28											
Worker Trips	88	32										
Total	116	32										

Source: Data compiled by AECOM, 2014.
Note: Values are shown as one-way trips (e.g., a value of “10” represents five trips to the site and five trips from the site each day).

Should these coordination efforts indicate that construction activities could result in a major parking deficit on the Campus, SFVAMC could consider expanding the existing valet parking program, currently operating in Building 209 and Building 212, to the new parking structure (Building 211). Based on the estimates provided in the LRDP, Building 211 would provide a total of 461 marked spaces. However, a valet parking program for this structure could provide approximately 140 additional spaces, based on the 30 percent increase in parking efficiency documented in field surveys of parking occupancy in Building 209 conducted as part of the Transportation Impact Study for the LRDP.

An important measure that would improve parking conditions during construction activities would be for SFVAMC to require its general contractors to establish carpool/vanpool programs. Because some construction workers reside outside of San Francisco, a vanpool service could be tailored to meet worker needs by operating as a “commuter shuttle” to major transit facilities, such as the Bay Area Rapid Transit (BART) stations at Civic Center or 16th Street/Mission. To encourage transit usage among construction workers, the contractor could provide free or discounted transit passes. A vanpool service could also be implemented in conjunction with an off-site “park-and-ride” facility, affording construction workers some of the convenience of a private vehicle while reducing some of the construction-related traffic effects in the immediate vicinity of the Campus. To implement such a solution, SFVAMC could purchase property to serve this purpose, or work along with its contractor to negotiate with the relevant property owners and parking operators to lease spaces in an off-site surface lot or parking structure for a fixed period of time. The vanpool service could be contracted out to a third-party service provider, operating on a fixed schedule during the morning and evening commute periods and on an on-call basis during the midday period.

SFVAMC general contractors should also be encouraged to optimize staging-area needs and coordinate vendor arrival schedules to minimize the associated traffic and parking impacts on the Campus community and surrounding neighborhoods. As indicated in **Table 1**, Alternative 1 would include provision of temporary modular swing space in four separate locations on the Campus, including Lot B. Lot B currently provides patient and visitor parking, including most of the Campus’s Americans with Disabilities Act (ADA)–compliant spaces for patients and visitors. To be able to use this parking facility to accommodate temporary modular structures during Campus construction, replacement ADA spaces would have to be provided temporarily elsewhere on the Campus or other measures would have to be implemented to ensure ADA compliance. In particular, spaces in Building 212 could be temporarily restriped for ADA use; or a valet solution could be implemented allowing patients and visitors who require ADA accommodations to drop off and pick up their vehicles at the traffic circle outside the Patient Welcome Center.

Construction Traffic Estimates: Alternative 2

Table 5 and **Table 6** summarize the estimated traffic volumes generated by LRDP construction activities on the Campus for Phase 1 and Phase 2, respectively, of Alternative 2.

Table 5: Construction-Related Parking Demand (Alternative 2, Phase 1)

Vehicle-Trip Type	2013											
	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
Vendor/Haul Truck Trips							2	2	2	2	2	4
Worker Trips							20	4	4	4	4	4
Total							22	6	6	6	6	8
Vehicle-Trip Type	**2014**											
	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
Vendor/Haul Truck Trips	6	6	8	16	16	14	14	14	14	14	14	14
Worker Trips	26	10	50	82	32	46	26	26	26	26	26	26
Total	32	16	58	98	48	60	40	40	40	40	40	40
Vehicle-Trip Type	**2015**											
	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
Vendor/Haul Truck Trips	14	10	20	10	10	14	14	20	38	38	42	52
Worker Trips	28	40	74	92	36	76	44	54	98	82	102	96
Total	42	50	94	102	46	90	58	74	136	120	144	148
Vehicle-Trip Type	**2016**											
	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
Vendor/Haul Truck Trips	72	34	34	34	34	32	30	30	26	42	30	32
Worker Trips	128	102	76	78	92	74	88	70	80	84	70	104
Total	200	136	110	112	126	106	118	100	106	126	100	136
Vehicle-Trip Type	**2017**											
	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
Vendor/Haul Truck Trips	28	28	28	28	28	28	28	28	28	28	24	24
Worker Trips	78	80	64	64	64	64	64	64	64	66	76	56
Total	106	108	92	92	92	92	92	92	92	94	100	80
Vehicle-Trip Type	**2018**											
	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
Vendor/Haul Truck Trips	24	24	24	22	22	22					10	10
Worker Trips	56	56	58	74	74	66	44	14			10	10
Total	80	80	83	96	96	88	44	14			20	20
Vehicle-Trip Type	**2019**											
	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
Vendor/Haul Truck Trips	10	10	10	10	10	10	10	10	10			
Worker Trips	10	10	10	10	10	10	10	10	10			
Total	20	20	20	20	20	20	20	20	20			

Source: Data compiled by AECOM, 2014.

Note: Values are shown as round trips—one trip in the table represents one trip to the site and one trip from the site each day.

Table 6: Construction-Related Parking Demand (Alternative 2, Phase 2)

Vehicle-Trip Type	2020											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Vendor/Haul Truck Trips											6	14
Worker Trips										20	54	44
Total										20	60	58

Vehicle-Trip Type	2021											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Vendor/Haul Truck Trips	14	14	14	14	14	14	14	14	14	14	8	8
Worker Trips	28	28	28	28	28	28	28	28	28	32	38	16
Total	42	42	42	42	42	42	42	42	42	46	46	24

Vehicle-Trip Type	2022											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Vendor/Haul Truck Trips	8	8	8	8				10	10	10	10	10
Worker Trips	16	16	16	20	22	10	26	32	22	22	22	22
Total	24	24	24	28	22	10	26	42	32	32	32	32

Vehicle-Trip Type	2023											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Vendor/Haul Truck Trips	10	10	10	10	10	10	10	10	10	10	10	
Worker Trips	22	22	22	22	22	22	22	22	22	22	28	24
Total	32	32	32	32	32	32	32	32	32	32	38	24

Vehicle-Trip Type	2024											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Vendor/Haul Truck Trips					72	28	28	28	28	28	28	28
Worker Trips	18		14	22	90	72	72	72	72	72	72	72
Total	18		14	22	162	100	100	100	100	100	100	100

Vehicle-Trip Type	2025											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Vendor/Haul Truck Trips	28	28	28	28	28	28	28	28	28	28	28	28
Worker Trips	72	72	72	72	72	72	72	72	72	72	72	88
Total	100	100	100	100	100	100	100	100	100	100	100	116

Vehicle-Trip Type	2026											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Vendor/Haul Truck Trips												
Worker Trips	32	16										
Total	32	16										

Source: Data compiled by AECOM, 2014.

Note: Values are shown as round trips—one trip in the table represents one trip to the site and one trip from the site each day.

As indicated in **Table 5** and **Table 6**, vendor and haul truck traffic under Alternative 2 would peak at 36 vehicles (72 trips) per day in January 2016 for Phase 1 and May 2024 for Phase 2. Construction worker trips under Alternative 2 would peak at 64 vehicles (128 trips) per day in January 2016. As a result, construction activities under Alternative 2 would generate their maximum traffic volumes in January 2016, with as many as 100 vehicles (200 trips) in one day. Construction traffic in other months would generally be much lower, with most months generating a maximum traffic volume that would not exceed 50 vehicles (100 trips) in one day.

Overall, LRDP construction-related activities on the Campus would generate lower maximum traffic levels under Alternative 2 than under Alternative 1. As a result, parking conditions are expected to be less constrained than under Alternative 1. The overall difference in maximum traffic levels would be relatively small—less than a 10 percent difference in traffic volumes during the peak month of construction traffic.

Recommended Measures

The recommendations identified for Alternative 1, to conduct detailed parking-occupancy surveys after the completion of Building 211 and potentially implement carpool/vanpool programs for construction workers, would also hold for Alternative 2.

Construction-Related Effects on Campus Circulation

It is anticipated that LRDP construction activities would take place primarily Monday through Friday between 7:30 a.m. and 6:00 p.m. Any Saturday work is assumed to occur between 8:00 a.m. and 4:00 p.m. on an as-needed basis, in compliance with the San Francisco Noise Control Ordinance (Article 29 of the Police Code) (City and County of San Francisco 2014) and San Francisco Department of Building Inspection permit conditions.

It is anticipated that no regular travel lanes or Muni bus stops would need to be closed or relocated during the LRDP construction period.

Under Alternative 1, temporary modular swing space would be located at four separate sites, including Lot B on the east side of the Campus. The east side of the Campus serves as the primary access for patients and visitors, and features most of the Campus's accommodations for on-site parking for these users. Circulation in this part of the Campus would likely be affected by a combination of three factors: temporary conversion of Lot B to accommodate modular swing space, curbside parking activities along the east side of Veterans Drive adjacent to Building 8 (Mental Health) and Building 9 (Hoptel), and increased Campus traffic during construction. Any effects of construction-related traffic on Campus circulation could also be amplified if construction activities were to occur simultaneously and/or close to each other.

Recommended Measures

Should construction activities require the closure of sidewalks or other pedestrian facilities within or outside of the Campus, protective measures should be implemented and equipment placed to ensure pedestrian safety. In high-conflict areas (either vehicle/pedestrian or vehicle/vehicle) such as access gates into construction sites, flag workers should be deployed to minimize traffic and pedestrian disruption and ensure the safety of Campus users.

Should it be determined that any travel lanes would require closure during construction, the lane closures should be coordinated with the City to minimize impacts on local traffic. In general, temporary traffic and transportation changes must be coordinated through SFMTA's Interdepartmental Staff Committee on Traffic and Transportation and require a public meeting. As part of this process, the construction management plan may be reviewed by SFMTA's Transportation Advisory Committee to resolve internal differences between different transportation modes. SFVAMC would follow the *Regulations for Working in San Francisco Streets* ("The Blue Book") (SFMTA, 2012) and would reimburse SFMTA for the costs of installation and removal of temporary striping and signage changes required during project construction.

SFVAMC and its construction contractors would need to meet with SFMTA, the San Francisco Fire Department, the San Francisco Planning Department, and other City agencies to determine feasible measures to reduce any construction-related effects, including any potential transit disruption and pedestrian circulation impacts during LRDP construction. To this effect, SFVAMC and its construction contractor(s) should consider implementing the following measures:

- Schedule most construction-related travel (i.e., deliveries, hauling, and worker trips) during the off-peak hours.
- Develop on-site detour routes to facilitate traffic movement through construction zones.
- Where feasible, temporarily restripe roadways—such as turn lanes, through lanes, and parking lanes—at affected locations to minimize driver confusion and optimize traffic flow.
- Where feasible, temporarily remove on-street parking to maximize the vehicular capacity at those locations affected by construction closures.
- Post signage to encourage drivers to proceed at slower, safer travel speeds through construction zones.
- Develop and implement an outreach program to inform the general public about the construction process and planned roadway closures.

Under Alternative 1, SFVAMC should also prepare and implement measures to minimize effects on circulation for traffic, transit, bicycles, pedestrians, and emergency vehicles in and around Lot B while temporary modular swing space occupies this site. Lot B and the adjacent section of Veterans Drive are currently designed with a one-way circulation pattern: northbound traffic along the east edge of the lot, southbound traffic along the west side of the lot. The presence of modular structures at this location, existing curbside parking activities, and the loss of parking capacity at Lot B could cause a temporary disruption of circulation through this part of the Campus. Potential measures could include the following:

- Enhancing signage and striping to reinforce the current one-way circulation pattern around Lot B
- Discouraging illegal parking, either curbside along the east side of Veterans Drive adjacent to Building 8 and Building 9 or elsewhere in and around Lot B
- Temporarily relocating curbside parking along the east side of Veterans Drive to other parts of the Campus
- Temporarily converting any remaining parking spaces in Lot B from perpendicular parking to parallel parking

Pedestrian crossings at blind spots or in locations with limited visibility for drivers (such as between modular structures) should also be discouraged, or should be properly designed with high-visibility markings and signage that force drivers to slow or stop. Adequate access for ambulances carrying patients to the Campus and emergency vehicles responding to on-Campus emergencies should be preserved at all times. During the construction planning process, SFVAMC and the general contractors should discuss the specific details of temporary measures to address any potential effects on Campus circulation. The magnitude of such effects can be more readily ascertained at that time.

Alternative 2 would include the provision of temporary modular swing space at a single location at the site of the current Building 12 and future Building 213. However, measures similar to those cited above for Alternative 1 should be implemented as needed to minimize the effects of construction-related activities on traffic, transit, bicycle, pedestrian, and emergency vehicle circulation. In particular, measures should be taken to ensure adequate safety and access for pedestrians crossing between Building 12 and surrounding facilities such as Building 200, Building 203, and Building 208. In addition, illegal parking should be discouraged, and existing perpendicular parking may need to be converted to parallel parking or closed temporarily to minimize effects on Campus circulation.

Construction-related activities occurring simultaneously and/or close to each other on the Campus under either Alternative 1 or Alternative 2 could amplify the effects of these activities on overall Campus circulation. For example, the construction of the Building 209 and Building 211 extensions under Subphase 1.5 (March 2015 to March 2016) would partially overlap with the construction of Building 40 under Subphase 1.9 (December 2015 through December 2018). The close proximity of these two sites may affect the constructability of on-Campus haul truck routes. In these cases, SFVAMC should serve as a liaison between the various general contractors for each construction project so that construction activities can be more effectively coordinated to minimize secondary effects on Campus circulation. SFVAMC should collaborate with contractors to secure adequate haul truck access and minimize disruption of access by Campus users, and should consider a variety of potential solutions such as limiting haul truck access to specific Campus access points or Campus roadways. In the case of Building 40 and the Building 209 and Building 211 extensions, for example, haul trucks could be restricted to the Campus's 43rd Avenue entrance, minimizing any impacts on circulation in the Campus's Veteran/visitor zone.

Alternative 3

The preceding discussions focused on Alternative 1 and Alternative 2, which assume that future expansion needs through 2030 for SFVAMC would be met on the Fort Miley Campus. The EIS also analyzes a third action alternative, Alternative 3, in which some SFVAMC expansion needs would be met at a new SFVAMC campus elsewhere in San Francisco. Although a specific site has yet to be determined, the EIS assumes that an expansion site would be identified in the Mission Bay area of San Francisco, either on the remaining undeveloped blocks in the Mission Bay South redevelopment area or at another site in the immediate vicinity. This section discusses construction-related traffic and parking concerns for this third LRDP alternative.

Construction-Related Haul Truck Routes

Several route options would be available for haul trucks traveling to and from an extension campus in Mission Bay. Both I-80 and I-280 are designated as freight traffic routes in the *San Francisco Truck Traffic Routes* map, together with The Embarcadero/King Street, Third Street, and Mariposa Street/17th Street. Fourth Street is designated a major arterial, while Seventh Street and 16th Street are designated as secondary arterials. A specific site for an extension campus has not yet been identified, but any haul trucks importing or exporting soil would be expected to use these roadways to reach the Mission Bay area. The same recommendations identified for Alternative 1 and Alternative 2 in the preceding section would generally also hold for Alternative 3. An adequate monitoring and queue-abatement program and other measures identified for Alternative 1 and Alternative 2 should similarly be implemented for construction of an extension campus at Mission Bay.

Construction-Related Traffic and Parking Demand

Construction of an extension campus in Mission Bay would not be expected to adversely affect parking conditions at the Fort Miley Campus. Such construction could potentially improve conditions because staff members and patients at the Fort Miley Campus would be instead directed to the extension campus, reducing overall parking demand at Fort Miley. Potential issues regarding parking capacity at Mission Bay are discussed below.

Table 7 summarizes the estimated traffic volume generated by construction activities at an extension campus in the Mission Bay area. The data are shown only for Phase 2; under Alternative 3, Phase 1 of the LRDP would involve the Fort Miley Campus, so the estimated traffic volume for Phase 1 would be as described in **Table 3** for Alternative 1 and **Table 5** for Alternative 2.

Table 7: Construction-Related Parking Demand (Alternative 3)

Vehicle-Trip Type	2024											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Vendor/Haul Truck Trips								26	26	26	26	26
Worker Trips								80	64	64	64	64
Total								106	90	90	90	90

Vehicle-Trip Type	2025											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Vendor/Haul Truck Trips	26	46	46	46	46	46	46	46	46	46	46	20
Worker Trips	64	132	116	116	116	116	116	116	116	116	130	114
Total	90	178	162	162	162	162	162	162	162	162	176	134

Vehicle-Trip Type	2026											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Vendor/Haul Truck Trips					34	34	34	34	34	34	34	34
Worker Trips					100	84	84	84	84	84	84	84
Total					134	118	118	118	118	118	118	118

Vehicle-Trip Type	2027											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Vendor/Haul Truck Trips	34	60	60	60	60	60	60	60	60	60	26	26
Worker Trips	92	158	148	148	148	148	148	148	148	166	100	112
Total	126	218	208	208	208	208	208	208	208	226	126	138

Source: Data compiled by AECOM, 2014.
Note: Values are shown as round trips—one trip in the table represents one trip to the site and one trip from the site each day.

As shown in **Table 7**, vendor and haul truck traffic at an extension campus in the Mission Bay area would peak at 30 vehicles (60 trips) per day from February through October 2027. Construction worker trips at the Mission Bay Campus would peak at 83 vehicles (166 trips) per day in October 2027. As a result, construction activities at the Mission Bay extension campus would generate their maximum traffic volumes in October 2027, with as many as 113 vehicles (226 trips) in one day. As under Alternative 1 and Alternative 2, only some of these vehicles would require dedicated parking spaces for extended periods of time during the day. Haul trucks would likely not require spaces at all, while vendor trucks could potentially share some spaces through the day as a result of parking turnover.

In addition, it is likely that an extension campus would be situated on one or more blocks in the Mission Bay South redevelopment area or the surrounding area immediately west along Seventh Street or 16th Street. Given the size of the development blocks and the number of undeveloped parcels remaining, construction staging and parking could likely be accommodated either on the construction site itself or on previously disturbed or partially developed parcels in the immediate vicinity of the site. In addition, several high-capacity parking facilities are already completed in the Mission Bay South area:

- Third Street Garage (1630 Third Street/Mission Bay South Block 23/Assessor's Block 8711, Lot 007): 822 spaces;
- 450 South Street Garage (Mission Bay South Block 27/Assessor's Block 8721, Lot 030): 1,423 spaces; and
- 1670 Owens Street Garage (Mission Bay South Block 41/43-3/Assessor's Block 8709, Lot 022): 820 spaces.

Although these facilities are intended for use primarily by occupants of surrounding buildings and tenants such as the University of California, San Francisco (UCSF) Mission Bay Campus, temporary leases could likely be arranged to accommodate parking for construction workers, depending on proximity to a proposed SFVAMC extension campus. Should parking constraints become an issue, measures similar to those proposed for the Fort Miley Campus could be implemented, including the use of vanpools to nearby Caltrain and BART stations or off-site parking facilities.

Construction-Related Traffic, Transit, and Pedestrian Interruption

The same recommendations identified for Alternative 1 and Alternative 2 in the preceding section would generally also hold for Alternative 3. Pedestrian protection, signage, public outreach, and other measures identified for Alternative 1 and Alternative 2 should similarly be implemented on an as-needed basis for construction of an extension campus at Mission Bay.

Conclusion

As described in the preceding sections, estimates of vendor/haul truck activity and construction worker trips during each subphase of the LRDP indicate that construction activities would generate a maximum traffic volume of approximately 100 vehicles (200 trips) per day during the peak month for construction traffic, but would not exceed 50 vehicles (100 trips) per day in most months. Although some of the proposed LRDP components would result in a temporary loss in on-site parking capacity, this loss would be offset by valet parking programs in the short-term time frame and the permanent net gain in on-site parking spaces in the long-term time frame. Should parking constraints become an issue, a variety of measures are available at the disposal of SFVAMC and its contractors to minimize traffic and parking effects during construction activities, such as using a vanpool service to connect the construction site with transit stations and off-site parking facilities.

References

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Appendix F

Noise Worksheets

- Construction Noise Calculations – On-Site Sources
- Construction Noise Calculations – Off-Site Sources
- Operation Noise Calculations – Off-Site Sources

Project: SFVAMC LDRP

Construction Phase: ***Demolition***

Equipment

Description	No. of Equip.	Reference Noise Level at 50ft, Lmax	Acoustical Usage Factor	Distance to Receptor, ft	Estimated Noise Shielding, dBA
Rubber Tired Loader	1	79	40%	600	10
Concrete/Industrial Saw	1	90	20%	600	10
Tractor/Loader/Backhoe	2	78	40%	600	10

Receptor: ***Location 1 - 43rd Avenue and Point Lobos Avenue***

Results:

1-hour Leq: 52.9

Source for Ref. Noise Levels: FHWA RCNM, 2006

Project: SFVAMC LDRP

Construction Phase: ***Site Preparation***

Equipment

Description	No. of Equip.	Reference Noise Level at 50ft, Lmax	Acoustical Usage Factor	Distance to Receptor, ft	Estimated Noise Shielding, dBA
Grader	1	85	40%	600	10
Tractor/Loader/Backhoe	1	78	40%	600	10

Receptor: ***Location 1 - 43rd Avenue and Point Lobos Avenue***

Results:

1-hour Leq: 50.2

Source for Ref. Noise Levels: FHWA RCNM, 2006

Project: SFVAMC LDRP

Construction Phase: ***Grading***

Equipment

Description	No. of Equip.	Reference Noise Level at 50ft, Lmax	Acoustical Usage Factor	Distance to Receptor, ft	Estimated Noise Shielding, dBA
Rubber Tired Loader	1	79	40%	600	10
Concrete/Industrial Saw	1	90	20%	600	10
Tractor/Loader/Backhoe	2	78	40%	600	10

Receptor: ***Location 1 - 43rd Avenue and Point Lobos Avenue***

Results:

1-hour Leq: 52.9

Source for Ref. Noise Levels: FHWA RCNM, 2006

Project: SFVAMC LDRP

Construction Phase: ***Building Construction***

Equipment

Description	No. of Equip.	Reference Noise Level at 50ft, Lmax	Acoustical Usage Factor	Distance to Receptor, ft	Estimated Noise Shielding, dBA
Crane	1	81	16%	600	10
Forklifts	2	75	50%	600	10
Tractor/Loader/Backhoe	2	78	40%	600	10

Receptor: ***Location 1 - 43rd Avenue and Point Lobos Avenue***

Results:

1-hour Leq: 48.5

Source for Ref. Noise Levels: FHWA RCNM, 2006

Project: SFVAMC LDRP

Construction Phase: ***Paving***

Equipment

Description	No. of Equip.	Reference Noise Level at 50ft, Lmax	Acoustical Usage Factor	Distance to Receptor, ft	Estimated Noise Shielding, dBA
Pavers	1	77	50%	600	10
Cement and Mortar Mixers	4	79	40%	600	10
Rollers	1	80	20%	600	10
Tractor/Loader/Backhoe	1	78	40%	600	10

Receptor: ***Location 1 - 43rd Avenue and Point Lobos Avenue***

Results:

1-hour Leq: 51.4

Source for Ref. Noise Levels: FHWA RCNM, 2006

Project: SFVAMC LDRP

Construction Phase: ***Demolition***

Equipment

Description	No. of Equip.	Reference Noise Level at 50ft, Lmax	Acoustical Usage Factor	Distance to Receptor, ft	Estimated Noise Shielding, dBA
Rubber Tired Loader	1	79	40%	300	0
Concrete/Industrial Saw	1	90	20%	300	0
Tractor/Loader/Backhoe	2	78	40%	300	0

Receptor: ***Location 2 - 42nd Avenue and Clement Street***

Results:

1-hour Leq: 68.9

Source for Ref. Noise Levels: FHWA RCNM, 2006

Project: SFVAMC LDRP

AECOM

Construction Phase: ***Site Preparation***

Equipment

Description	No. of Equip.	Reference Noise Level at 50ft, Lmax	Acoustical Usage Factor	Distance to Receptor, ft	Estimated Noise Shielding, dBA
Grader	1	85	40%	300	0
Tractor/Loader/Backhoe	1	78	40%	300	0

Receptor: ***Location 2 - 42nd Avenue and Clement Street***

Results:

1-hour Leq: 66.2

Source for Ref. Noise Levels: FHWA RCNM, 2006

Project: SFVAMC LDRP

Construction Phase: ***Grading***

Equipment

Description	No. of Equip.	Reference Noise Level at 50ft, Lmax	Acoustical Usage Factor	Distance to Receptor, ft	Estimated Noise Shielding, dBA
Rubber Tired Loader	1	79	40%	300	0
Concrete/Industrial Saw	1	90	20%	300	0
Tractor/Loader/Backhoe	2	78	40%	300	0

Receptor: ***Location 2 - 42nd Avenue and Clement Street***

Results:

1-hour Leq: 68.9

Source for Ref. Noise Levels: FHWA RCNM, 2006

Project: SFVAMC LDRP

Construction Phase: ***Building Construction***

Equipment

Description	No. of Equip.	Reference Noise Level at 50ft, Lmax	Acoustical Usage Factor	Distance to Receptor, ft	Estimated Noise Shielding, dBA
Crane	1	81	16%	300	0
Forklifts	2	75	50%	300	0
Tractor/Loader/Backhoe	2	78	40%	300	0

Receptor: ***Location 2 - 42nd Avenue and Clement Street***

Results:

1-hour Leq: 64.5

Source for Ref. Noise Levels: FHWA RCNM, 2006

Project: SFVAMC LDRP

Construction Phase: ***Paving***

Equipment

Description	No. of Equip.	Reference Noise Level at 50ft, Lmax	Acoustical Usage Factor	Distance to Receptor, ft	Estimated Noise Shielding, dBA
Pavers	1	77	50%	300	0
Cement and Mortar Mixers	4	79	40%	300	0
Rollers	1	80	20%	300	0
Tractor/Loader/Backhoe	1	78	40%	300	0

Receptor: ***Location 2 - 42nd Avenue and Clement Street***

Results:

1-hour Leq: 67.4

Source for Ref. Noise Levels: FHWA RCNM, 2006

Project: SFVAMC LDRP

Construction Phase: ***Demolition***

Equipment

Description	No. of Equip.	Reference Noise Level at 50ft, Lmax	Acoustical Usage Factor	Distance to Receptor, ft	Estimated Noise Shielding, dBA
Rubber Tired Loader	1	79	40%	100	0
Concrete/Industrial Saw	1	90	20%	100	0
Tractor/Loader/Backhoe	2	78	40%	100	0

Receptor: ***Location 3 - Front lawn area southeast of Bldg. 203***

Results:

1-hour Leq: 78.5

Source for Ref. Noise Levels: FHWA RCNM, 2006

Project: SFVAMC LDRP

AECOM

Construction Phase: ***Site Preparation***

Equipment

Description	No. of Equip.	Reference Noise Level at 50ft, Lmax	Acoustical Usage Factor	Distance to Receptor, ft	Estimated Noise Shielding, dBA
Grader	1	85	40%	100	0
Tractor/Loader/Backhoe	1	78	40%	100	0

Receptor: ***Location 3 - Front lawn area southeast of Bldg. 203***

Results:

1-hour Leq: 75.8

Source for Ref. Noise Levels: FHWA RCNM, 2006

Project: SFVAMC LDRP

Construction Phase: ***Grading***

Equipment

Description	No. of Equip.	Reference Noise Level at 50ft, Lmax	Acoustical Usage Factor	Distance to Receptor, ft	Estimated Noise Shielding, dBA
Rubber Tired Loader	1	79	40%	100	0
Concrete/Industrial Saw	1	90	20%	100	0
Tractor/Loader/Backhoe	2	78	40%	100	0

Receptor: ***Location 3 - Front lawn area southeast of Bldg. 203***

Results:

1-hour Leq: 78.5

Source for Ref. Noise Levels: FHWA RCNM, 2006

Project: SFVAMC LDRP

Construction Phase: ***Building Construction***

Equipment

Description	No. of Equip.	Reference Noise Level at 50ft, Lmax	Acoustical Usage Factor	Distance to Receptor, ft	Estimated Noise Shielding, dBA
Crane	1	81	16%	100	0
Forklifts	2	75	50%	100	0
Tractor/Loader/Backhoe	2	78	40%	100	0

Receptor: ***Location 3 - Front lawn area southeast of Bldg. 203***

Results:

1-hour Leq: 74.1

Source for Ref. Noise Levels: FHWA RCNM, 2006

Project: SFVAMC LDRP

Construction Phase: ***Paving***

Equipment

Description	No. of Equip.	Reference Noise Level at 50ft, Lmax	Acoustical Usage Factor	Distance to Receptor, ft	Estimated Noise Shielding, dBA
Pavers	1	77	50%	100	0
Cement and Mortar Mixers	4	79	40%	100	0
Rollers	1	80	20%	100	0
Tractor/Loader/Backhoe	1	78	40%	100	0

Receptor: ***Location 3 - Front lawn area southeast of Bldg. 203***

Results:

1-hour Leq: 76.9

Source for Ref. Noise Levels: FHWA RCNM, 2006

Project: SFVAMC LDRP

Construction Phase: ***Demolition***

Equipment

Description	No. of Equip.	Reference Noise Level at 50ft, Lmax	Acoustical Usage Factor	Distance to Receptor, ft	Estimated Noise Shielding, dBA
Rubber Tired Loader	1	79	40%	50	0
Concrete/Industrial Saw	1	90	20%	50	0
Tractor/Loader/Backhoe	2	78	40%	50	0

Receptor: ***Location 4 - 50 feet from construction area***

Results:

1-hour Leq: 84.5

Source for Ref. Noise Levels: FHWA RCNM, 2006

Project: SFVAMC LDRP

Construction Phase: ***Site Preparation***

Equipment

Description	No. of Equip.	Reference Noise Level at 50ft, Lmax	Acoustical Usage Factor	Distance to Receptor, ft	Estimated Noise Shielding, dBA
Grader	1	85	40%	50	0
Tractor/Loader/Backhoe	1	78	40%	50	0

Receptor: ***Location 4 - 50 feet from construction area***

Results:

1-hour Leq: 81.8

Source for Ref. Noise Levels: FHWA RCNM, 2006

Project: SFVAMC LDRP

Construction Phase: ***Grading***

Equipment

Description	No. of Equip.	Reference Noise Level at 50ft, Lmax	Acoustical Usage Factor	Distance to Receptor, ft	Estimated Noise Shielding, dBA
Rubber Tired Loader	1	79	40%	50	0
Concrete/Industrial Saw	1	90	20%	50	0
Tractor/Loader/Backhoe	2	78	40%	50	0

Receptor: ***Location 4 - 50 feet from construction area***

Results:

1-hour Leq: 84.5

Source for Ref. Noise Levels: FHWA RCNM, 2006

Project: SFVAMC LDRP

Construction Phase: ***Building Construction***

Equipment

Description	No. of Equip.	Reference Noise Level at 50ft, Lmax	Acoustical Usage Factor	Distance to Receptor, ft	Estimated Noise Shielding, dBA
Crane	1	81	16%	50	0
Forklifts	2	75	50%	50	0
Tractor/Loader/Backhoe	2	78	40%	50	0

Receptor: ***Location 4 - 50 feet from construction area***

Results:

1-hour Leq: 80.1

Source for Ref. Noise Levels: FHWA RCNM, 2006

Project: SFVAMC LDRP

AECOM

Construction Phase: ***Paving***

Equipment

Description	No. of Equip.	Reference Noise Level at 50ft, Lmax	Acoustical Usage Factor	Distance to Receptor, ft	Estimated Noise Shielding, dBA
Pavers	1	77	50%	50	0
Cement and Mortar Mixers	4	79	40%	50	0
Rollers	1	80	20%	50	0
Tractor/Loader/Backhoe	1	78	40%	50	0

Receptor: ***Location 4 - 50 feet from construction area***

Results:

1-hour Leq: 83.0

Source for Ref. Noise Levels: FHWA RCNM, 2006

Project: SFVAMC LDRP

Construction Phase: ***Building 10 Retrofit***

Equipment

Description	No. of Equip.	Reference Noise Level at 50ft, Lmax	Acoustical Usage Factor	Distance to Receptor, ft	Estimated Noise Shielding, dBA
Crane	0	81	16%	50	0
Forklifts	1	75	20%	50	0
Tractor/Loader/Backhoe	1	78	40%	50	0

Receptor: ***Child Care Center - Building 32***

Results:

1-hour Leq: 75.0

Source for Ref. Noise Levels: FHWA RCNM, 2006

Project: SFVAMC LDRP

Construction Phase: ***Building 10 Retrofit***

Equipment

Description	No. of Equip.	Reference Noise Level at 50ft, Lmax	Acoustical Usage Factor	Distance to Receptor, ft	Estimated Noise Shielding, dBA
Crane	0	81	16%	100	9
Forklifts	1	75	20%	100	9
Tractor/Loader/Backhoe	1	78	40%	100	9

Receptor: ***Child Care Center - Outdoor Play Area***

Results:

1-hour Leq: 60.0

Source for Ref. Noise Levels: FHWA RCNM, 2006

Project: SFVAMC LDRP

Construction Phase: ***Modular Installation (Trailer T-36)***

Equipment

Description	No. of Equip.	Reference Noise Level at 50ft, Lmax	Acoustical Usage Factor	Distance to Receptor, ft	Estimated Noise Shielding, dBA
Crane	1	81	16%	50	0
Forklifts	1	75	40%	50	0
Tractor/Loader/Backhoe	0	78	30%	50	0

Receptor: ***Nearest off-site residence on Sea Rock Drive***

Results:

1-hour Leq: 75.2

Source for Ref. Noise Levels: FHWA RCNM, 2005

Project: SFVAMC LDRP

AECOM

Construction Phase: ***Patient Welcome Center & Drop-off Area***

Equipment

Description	No. of Equip.	Reference Noise Level at 50ft, Lmax	Acoustical Usage Factor	Distance to Receptor, ft	Estimated Noise Shielding, dBA
Rubber Tired Loader	1	79	40%	175	0
Concrete/Industrial Saw	1	90	20%	175	0
Tractor/Loader/Backhoe	2	78	40%	175	0

Receptor: ***Nearest off-site residene on Clement St. east of 43rd Ave.***

Results:

1-hour Leq: 73.6

Source for Ref. Noise Levels: FHWA RCNM, 2006

Project: SFVAMC LDRP

AECOM

Construction Off-Site Traffic

	Daily One-Way Truck Trips	Daily One-Way Worker Trips	Hourly One-Way Truck Trips	Hourly One-Way Worker Trips	Est. Noise Levels, dBA Leq
Alternative 1					
Short-term Projects	72	144	9	72	58.6
Long-term Projects	72	88	9	44	58.1
Alternative 2					
Short-term Projects	72	128	9	64	58.5
Long-term Projects	72	90	9	45	58.2
Alternative 3					
Short-term Projects	72	144	9	72	58.6
Long-Term Projects	n/a	n/a	n/a	n/a	n/a

Estimated Noise Levels are calculated using FHWA TNM computer noise model

AECOM						**2014**						
SKB					**TNM 2.5**							
INPUT: ROADWAYS							**Average pavement type shall be used unless**					
PROJECT/CONTRACT:	**SFVAMC LDRP**						**a State highway agency substantiates the use**					
RUN:	**Alternative 1, Short-Term Projects**						**of a different type with the approval of FHWA**					
Roadway		**Points**										
Name	**Width**	**Name**	**No.**	**Coordinates (pavement)**			**Flow Control**			**Segment**		
				X	**Y**	**Z**	**Control Device**	**Speed Constraint**	**Percent Vehicles Affected**	**Pvmt Type**	**On Struct?**	
	ft			ft	ft	ft		mph	%			
Truck Route	12.0	point1	1	0.0	0.0	0.00				Average		
		point2	2	750.0	0.0	0.00						

AECOM				**2014**									
SKB				**TNM 2.5**									
INPUT: TRAFFIC FOR LAeq1h Volumes													
PROJECT/CONTRACT:	**SFVAMC LDRP**												
RUN:	**Alternative 1, Short-Term Projects**												
Roadway	**Points**												
Name	**Name**	**No.**	**Segment**										
			Autos		**MTrucks**		**HTrucks**		**Buses**		**Motorcycles**		
			V	**S**	**V**	**S**	**V**	**S**	**V**	**S**	**V**	**S**	
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	
Truck Route	point1	1	72	30	0	0	9	30	0	0	0	0	
	point2	2											

AECOM						**2014**					
SKB						**TNM 2.5**					
INPUT: RECEIVERS											
PROJECT/CONTRACT:	**SFVAMC LDRP**										
RUN:	**Alternative 1, Short-Term Projects**										
Receiver											
Name	**No.**	**#DUs**	**Coordinates (ground)**			**Height**	**Input Sound Levels and Criteria**				**Active**
			X	**Y**	**Z**	**above**	**Existing**	**Impact Criteria**		**NR**	**in**
						Ground	**LAeq1h**	**LAeq1h**	**Sub'l**	**Goal**	**Calc.**
			ft	ft	ft	ft	dBA	dBA	dB	dB	
Receiver1	1	1	375.0	30.0	0.00	4.92	0.00	66	10.0	8.0	Y

AECOM								**2014**				
SKB							**TNM 2.5**					
							Calculated with TNM 2.5					
RESULTS: SOUND LEVELS												
PROJECT/CONTRACT:		**SFVAMC LDRP**										
RUN:		**Alternative 1, Short-Term Projects**										
BARRIER DESIGN:		**INPUT HEIGHTS**						**Average pavement type shall be used unless**				
								a State highway agency substantiates the use				
ATMOSPHERICS:		**68 deg F, 50% RH**						**of a different type with approval of FHWA.**				
Receiver												
Name	**No.**	**#DUs**	**Existing**	**No Barrier**					**With Barrier**			
			LAeq1h	**LAeq1h**		**Increase over existing**		**Type**	**Calculated**	**Noise Reduction**		
				Calculated	**Crit'n**	**Calculated**	**Crit'n**	**Impact**	**LAeq1h**	**Calculated**	**Goal**	**Calculated**
							Sub'l Inc					**minus**
												Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
Receiver1	1	1	0.0	58.6	66	58.6	10	----	58.6	0.0	8	-8.0

Dwelling Units	**# DUs**	**Noise Reduction**		
		Min	**Avg**	**Max**
		dB	**dB**	**dB**
All Selected	1	0.0	0.0	0.0
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

AECOM						**2014**					
SKB					**TNM 2.5**						
INPUT: ROADWAYS							**Average pavement type shall be used unless**				
PROJECT/CONTRACT:	**SFVAMC LDRP**						**a State highway agency substantiates the use**				
RUN:	**Alternative 1, Long-Term Projects**						**of a different type with the approval of FHWA**				
Roadway		**Points**									
Name	**Width**	**Name**	**No.**	**Coordinates (pavement)**			**Flow Control**			**Segment**	
				X	**Y**	**Z**	**Control Device**	**Speed Constraint**	**Percent Vehicles Affected**	**Pvmt Type**	**On Struct?**
	ft			ft	ft	ft		mph	%		
Truck Route	12.0	point1	1	0.0	0.0	0.00				Average	
		point2	2	750.0	0.0	0.00					

AECOM			**2014**									
SKB			**TNM 2.5**									
INPUT: TRAFFIC FOR LAeq1h Volumes												
PROJECT/CONTRACT:	**SFVAMC LDRP**											
RUN:	**Alternative 1, Long-Term Projects**											
Roadway	**Points**											
Name	**Name**	**No.**	**Segment**									
			Autos		**MTrucks**		**HTrucks**		**Buses**		**Motorcycles**	
			V	**S**	**V**	**S**	**V**	**S**	**V**	**S**	**V**	**S**
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph
Truck Route	point1	1	41	30	0	0	9	30	0	0	0	0
	point2	2										

AECOM							**2014**				
SKB						**TNM 2.5**					
INPUT: RECEIVERS											
PROJECT/CONTRACT:	**SFVAMC LDRP**										
RUN:	**Alternative 1, Long-Term Projects**										
Receiver											
Name	**No.**	**#DUs**	**Coordinates (ground)**			**Height**	**Input Sound Levels and Criteria**				**Active**
			X	**Y**	**Z**	**above**	**Existing**	**Impact Criteria**		**NR**	**in**
						Ground	**LAeq1h**	**LAeq1h**	**Sub'l**	**Goal**	**Calc.**
			ft	ft	ft	ft	dBA	dBA	dB	dB	
Receiver1	1	1	375.0	30.0	0.00	4.92	0.00	66	10.0	8.0	Y

AECOM							**2014**					
SKB						**TNM 2.5**						
						Calculated with TNM 2.5						
RESULTS: SOUND LEVELS												
PROJECT/CONTRACT:		**SFVAMC LDRP**										
RUN:		**Alternative 1, Long-Term Projects**										
BARRIER DESIGN:		**INPUT HEIGHTS**					**Average pavement type shall be used unless**					
							a State highway agency substantiates the use					
ATMOSPHERICS:		**68 deg F, 50% RH**					**of a different type with approval of FHWA.**					

Receiver												
Name	**No.**	**#DUs**	**Existing**	**No Barrier**					**With Barrier**			
			LAeq1h	**LAeq1h**		**Increase over existing**		**Type**	**Calculated**	**Noise Reduction**		
				Calculated	**Crit'n**	**Calculated**	**Crit'n**	**Impact**	**LAeq1h**	**Calculated**	**Goal**	**Calculated**
							Sub'l Inc					**minus**
												Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
Receiver1	1	1	0.0	58.1	66	58.1	10	----	58.1	0.0	8	-8.0

Dwelling Units		**# DUs**	**Noise Reduction**		
			Min	**Avg**	**Max**
			dB	**dB**	**dB**
All Selected		1	0.0	0.0	0.0
All Impacted		0	0.0	0.0	0.0
All that meet NR Goal		0	0.0	0.0	0.0

AECOM						2014						
SKB					TNM 2.5							
INPUT: ROADWAYS							Average pavement type shall be used unless					
PROJECT/CONTRACT:	SFVAMC LDRP						a State highway agency substantiates the use					
RUN:	Alternative 2, Short-Term Projects						of a different type with the approval of FHWA					
Roadway		Points										
Name	Width	Name	No.	Coordinates (pavement)			Flow Control			Segment	
				X	Y	Z	Control Device	Speed Constraint	Percent Vehicles Affected	Pvmt Type	On Struct?
	ft			ft	ft	ft		mph	%		
Truck Route	12.0	point1	1	0.0	0.0	0.00				Average	
		point2	2	750.0	0.0	0.00					

AECOM			**2014**										
SKB			**TNM 2.5**										
INPUT: TRAFFIC FOR LAeq1h Volumes													
PROJECT/CONTRACT:	**SFVAMC LDRP**												
RUN:	**Alternative 2, Short-Term Projects**												
Roadway	**Points**												
Name	**Name**	**No.**	**Segment**										
			Autos		**MTrucks**		**HTrucks**		**Buses**		**Motorcycles**		
			V	**S**	**V**	**S**	**V**	**S**	**V**	**S**	**V**	**S**	
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	
Truck Route	point1	1	64	30	0	0	9	30	0	0	0	0	
	point2	2											

AECOM							**2014**				
SKB						**TNM 2.5**					
INPUT: RECEIVERS											
PROJECT/CONTRACT:	**SFVAMC LDRP**										
RUN:	**Alternative 2, Short-Term Projects**										
Receiver											
Name	**No.**	**#DUs**	**Coordinates (ground)**			**Height**	**Input Sound Levels and Criteria**				**Active**
			X	**Y**	**Z**	**above**	**Existing**	**Impact Criteria**		**NR**	**in**
						Ground	**LAeq1h**	**LAeq1h**	**Sub'l**	**Goal**	**Calc.**
			ft	ft	ft	ft	dBA	dBA	dB	dB	
Receiver1	1	1	375.0	30.0	0.00	4.92	0.00	66	10.0	8.0	Y

AECOM			2014										
SKB			TNM 2.5										
INPUT: TRAFFIC FOR LAeq1h Volumes													
PROJECT/CONTRACT:	SFVAMC LDRP												
RUN:	Alternative 2, Short-Term Projects												
Roadway	**Points**												
Name	**Name**	**No.**	**Segment**										
			Autos		**MTrucks**		**HTrucks**		**Buses**		**Motorcycles**		
			V	**S**	**V**	**S**	**V**	**S**	**V**	**S**	**V**	**S**	
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	
Truck Route	point1	1	64	30	0	0	9	30	0	0	0	0	
	point2	2											

AECOM								**2014**				
SKB							**TNM 2.5**					
							Calculated with TNM 2.5					
RESULTS: SOUND LEVELS												
PROJECT/CONTRACT:		**SFVAMC LDRP**										
RUN:		**Alternative 2, Short-Term Projects**										
BARRIER DESIGN:		**INPUT HEIGHTS**						**Average pavement type shall be used unless**				
								a State highway agency substantiates the use				
ATMOSPHERICS:		**68 deg F, 50% RH**						**of a different type with approval of FHWA.**				
Receiver												
Name	**No.**	**#DUs**	**Existing**	**No Barrier**					**With Barrier**			
			LAeq1h	**LAeq1h**		**Increase over existing**		**Type**	**Calculated**	**Noise Reduction**		
				Calculated	**Crit'n**	**Calculated**	**Crit'n**	**Impact**	**LAeq1h**	**Calculated**	**Goal**	**Calculated**
							Sub'l Inc					**minus**
												Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
Receiver1	1	1	0.0	58.5	66	58.5	10	----	58.5	0.0	8	-8.0

Dwelling Units	**# DUs**	**Noise Reduction**		
		Min	**Avg**	**Max**
		dB	**dB**	**dB**
All Selected	1	0.0	0.0	0.0
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

AECOM						2014						
SKB					TNM 2.5							
INPUT: ROADWAYS							Average pavement type shall be used unless					
PROJECT/CONTRACT:	SFVAMC LDRP						a State highway agency substantiates the use					
RUN:	Alternative 2, Short-Term Projects						of a different type with the approval of FHWA					
Roadway		Points										
Name	Width	Name	No.	Coordinates (pavement)			Flow Control			Segment	
				X	Y	Z	Control Device	Speed Constraint	Percent Vehicles Affected	Pvmt Type	On Struct?
	ft			ft	ft	ft		mph	%		
Truck Route	12.0	point1	1	0.0	0.0	0.00				Average	
		point2	2	750.0	0.0	0.00					

AECOM			2014										
SKB			TNM 2.5										
INPUT: TRAFFIC FOR LAeq1h Volumes													
PROJECT/CONTRACT:	SFVAMC LDRP												
RUN:	Alternative 2, Short-Term Projects												
Roadway	Points												
Name	Name	No.	Segment										
			Autos		MTrucks		HTrucks		Buses		Motorcycles		
			V	S	V	S	V	S	V	S	V	S	
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	
Truck Route	point1	1	64	30	0	0	9	30	0	0	0	0	
	point2	2											

AECOM						**2014**					
SKB						**TNM 2.5**					
INPUT: RECEIVERS											
PROJECT/CONTRACT:	**SFVAMC LDRP**										
RUN:	**Alternative 2, Short-Term Projects**										
Receiver											
Name	**No.**	**#DUs**	**Coordinates (ground)**			**Height**	**Input Sound Levels and Criteria**				**Active**
			X	**Y**	**Z**	**above**	**Existing**	**Impact Criteria**		**NR**	**in**
						Ground	**LAeq1h**	**LAeq1h**	**Sub'l**	**Goal**	**Calc.**
			ft	ft	ft	ft	dBA	dBA	dB	dB	
Receiver1	1	1	375.0	30.0	0.00	4.92	0.00	66	10.0	8.0	Y

AECOM							**2014**					
SKB							**TNM 2.5**					
							Calculated with TNM 2.5					
RESULTS: SOUND LEVELS												
PROJECT/CONTRACT:		**SFVAMC LDRP**										
RUN:		**Alternative 2, Short-Term Projects**										
BARRIER DESIGN:		**INPUT HEIGHTS**						**Average pavement type shall be used unless**				
								a State highway agency substantiates the use				
ATMOSPHERICS:		**68 deg F, 50% RH**						**of a different type with approval of FHWA.**				
Receiver												
Name	**No.**	**#DUs**	**Existing**	**No Barrier**					**With Barrier**			
			LAeq1h	**LAeq1h**		**Increase over existing**		**Type**	**Calculated**	**Noise Reduction**		
				Calculated	**Crit'n**	**Calculated**	**Crit'n**	**Impact**	**LAeq1h**	**Calculated**	**Goal**	**Calculated**
							Sub'l Inc					**minus**
												Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
Receiver1	1	1	0.0	58.5	66	58.5	10	----	58.5	0.0	8	-8.0

Dwelling Units		**# DUs**	**Noise Reduction**		
			Min	**Avg**	**Max**
			dB	**dB**	**dB**
All Selected		1	0.0	0.0	0.0
All Impacted		0	0.0	0.0	0.0
All that meet NR Goal		0	0.0	0.0	0.0

AECOM						2014						
SKB					TNM 2.5							
INPUT: ROADWAYS							Average pavement type shall be used unless					
PROJECT/CONTRACT:	SFVAMC LDRP						a State highway agency substantiates the use					
RUN:	Alternative 1, Scenario B, Phase 2						of a different type with the approval of FHWA					
Roadway		Points										
Name	Width	Name	No.	Coordinates (pavement)			Flow Control			Segment	
				X	Y	Z	Control Device	Speed Constraint	Percent Vehicles Affected	Pvmt Type	On Struct?
	ft			ft	ft	ft		mph	%		
Truck Route	12.0	point1	1	0.0	0.0	0.00				Average	
		point2	2	750.0	0.0	0.00					

AECOM			**2014**										
SKB			**TNM 2.5**										
INPUT: TRAFFIC FOR LAeq1h Volumes													
PROJECT/CONTRACT:	**SFVAMC LDRP**												
RUN:	**Alternative 1, Scenario B, Phase 2**												
Roadway	**Points**												
Name	**Name**	**No.**	**Segment**										
			Autos		**MTrucks**		**HTrucks**		**Buses**		**Motorcycles**		
			V	**S**	**V**	**S**	**V**	**S**	**V**	**S**	**V**	**S**	
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	
Truck Route	point1	1	45	30	0	0	9	30	0	0	0	0	
	point2	2											

AECOM						**2014**					
SKB						**TNM 2.5**					
INPUT: RECEIVERS											
PROJECT/CONTRACT:	**SFVAMC LDRP**										
RUN:	**Alternative 1, Scenario B, Phase 2**										
Receiver											
Name	**No.**	**#DUs**	**Coordinates (ground)**			**Height**	**Input Sound Levels and Criteria**				**Active**
			X	**Y**	**Z**	**above**	**Existing**	**Impact Criteria**		**NR**	**in**
						Ground	**LAeq1h**	**LAeq1h**	**Sub'l**	**Goal**	**Calc.**
			ft	ft	ft	ft	dBA	dBA	dB	dB	
Receiver1	1	1	375.0	30.0	0.00	4.92	0.00	66	10.0	8.0	Y

AECOM		2014
SKB		TNM 2.5
		Calculated with TNM 2.5
RESULTS: SOUND LEVELS		
PROJECT/CONTRACT:	SFVAMC LDRP	
RUN:	Alternative 1, Scenario B, Phase 2	
BARRIER DESIGN:	INPUT HEIGHTS	Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.
ATMOSPHERICS:	68 deg F, 50% RH	

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
Receiver1	1	1	0.0	58.2	66	58.2	10	----	58.2	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Avg	Max
		dB	dB	dB
All Selected	1	0.0	0.0	0.0
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

AECOM						2014						
SKB					TNM 2.5							
INPUT: ROADWAYS							Average pavement type shall be used unless					
PROJECT/CONTRACT:	SFVAMC LDRP						a State highway agency substantiates the use					
RUN:	Alternative 3, Short-Term Projects						of a different type with the approval of FHWA					
Roadway		Points										
Name	Width	Name	No.	Coordinates (pavement)			Flow Control			Segment	
				X	Y	Z	Control Device	Speed Constraint	Percent Vehicles Affected	Pvmt Type	On Struct?
	ft			ft	ft	ft		mph	%		
Truck Route	12.0	point1	1	0.0	0.0	0.00				Average	
		point2	2	750.0	0.0	0.00					

AECOM				**2014**									
SKB				**TNM 2.5**									
INPUT: TRAFFIC FOR LAeq1h Volumes													
PROJECT/CONTRACT:	**SFVAMC LDRP**												
RUN:	**Alternative 3, Short-Term Projects**												
Roadway	**Points**												
Name	**Name**	**No.**	**Segment**										
			Autos		**MTrucks**		**HTrucks**		**Buses**		**Motorcycles**		
			V	**S**	**V**	**S**	**V**	**S**	**V**	**S**	**V**	**S**	
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	
Truck Route	point1	1	72	30	0	0	9	30	0	0	0	0	
	point2	2											

AECOM						2014					
SKB						TNM 2.5					
INPUT: RECEIVERS											
PROJECT/CONTRACT:	SFVAMC LDRP										
RUN:	Alternative 3, Short-Term Projects										
Receiver											
Name	No.	#DUs	Coordinates (ground)			Height	Input Sound Levels and Criteria				Active
			X	Y	Z	above	Existing	Impact Criteria		NR	in
						Ground	LAeq1h	LAeq1h	Sub'l	Goal	Calc.
			ft	ft	ft	ft	dBA	dBA	dB	dB	
Receiver1	1	1	375.0	30.0	0.00	4.92	0.00	66	10.0	8.0	Y

AECOM							**2014**					
SKB							**TNM 2.5**					
							Calculated with TNM 2.5					
RESULTS: SOUND LEVELS												
PROJECT/CONTRACT:		**SFVAMC LDRP**										
RUN:		**Alternative 3, Short-Term Projects**										
BARRIER DESIGN:		**INPUT HEIGHTS**						**Average pavement type shall be used unless**				
								a State highway agency substantiates the use				
ATMOSPHERICS:		**68 deg F, 50% RH**						**of a different type with approval of FHWA.**				
Receiver												
Name	**No.**	**#DUs**	**Existing**	**No Barrier**					**With Barrier**			
			LAeq1h	**LAeq1h**		**Increase over existing**		**Type**	**Calculated**	**Noise Reduction**		
				Calculated	**Crit'n**	**Calculated**	**Crit'n**	**Impact**	**LAeq1h**	**Calculated**	**Goal**	**Calculated**
							Sub'l Inc					**minus**
												Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
Receiver1	1	1	0.0	58.6	66	58.6	10	----	58.6	0.0	8	-8.0

Dwelling Units		**# DUs**	**Noise Reduction**		
			Min	**Avg**	**Max**
			dB	**dB**	**dB**
All Selected		1	0.0	0.0	0.0
All Impacted		0	0.0	0.0	0.0
All that meet NR Goal		0	0.0	0.0	0.0

Appendix F

Traffic Noise Prediction Model, (FHWA RD-77-108)

Model Input Sheet

Project Name : SFVAMC LRDP Final EIS
Project Number : 60208383
Modeling Condition : Existing
Ground Type : Hard
Metric (L_{eq}, L_{dn}, CNEL) : Ldn
K Factor : 10
Traffic Desc. (Peak or ADT) : Peak

Segment	Roadway	Segment From	Segment To	Traffic Vol.	Speed (Mph)	Distance to CL	% Autos	%MT	% HT	Day %	Eve %	Night %	Offset (dB)
1	Clement Street	43 Avenue	42 Avenue	469	30	50	98	1	1	80		20	
2	Clement Street	42 Avenue	34 Avenue	625	30	50	98	1	1	80		20	
3	Clement Street	43 Avenue	48 Avenue	348	30	50	98	1	1	80		20	
4	43 Avenue	Clement Street	Point Lobos Avenue	345	30	50	98	1	1	80		20	
5	42 Avenue	Clement Street	Point Lobos Avenue	168	30	50	98	1	1	80		20	

Traffic Noise Prediction Model, (FHWA RD-77-108)

Predicted Noise Levels

AECOM

Project Name : SFVAMC LRDP Final EIS
Project Number : 60208383
Modeling Condition : Existing
Metric (Leq, Ldn, CNEL) : Ldn

		Segment		Noise Levels, dB Ldn				Distance to Traffic Noise Contours, Feet				
Segment	Roadway	From	To	Auto	MT	HT	Total	70 dB	65 dB	60 dB	55 dB	50 dB
1	Clement Street	43 Avenue	42 Avenue	59.7	50.3	57.4	62.0	8	25	79	251	793
2	Clement Street	42 Avenue	34 Avenue	60.9	51.6	58.7	63.3	11	33	106	334	1057
3	Clement Street	43 Avenue	48 Avenue	58.4	49.0	56.1	60.7	6	19	59	186	589
4	43 Avenue	Clement Street	Point Lobos Avenu	58.3	49.0	56.1	60.7	6	18	58	185	583
5	42 Avenue	Clement Street	Point Lobos Avenu	55.2	45.9	53.0	57.5	3	9	28	90	284

Appendix F
Traffic Noise Prediction Model, (FHWA RD-77-108)
Model Input Sheet

Project Name : SFVAMC LRDP Final EIS
Project Number : 60208383
Modeling Condition : 2020 Short-term Alternatives 1 and 2
Ground Type : Hard **K Factor :** 10
Metric (L_{eq}, L_{dn}, CNEL) : Ldn **Traffic Desc. (Peak or ADT) :** Peak

Segment	Roadway	Segment From	To	Traffic Vol.	Speed (Mph)	Distance to CL	% Autos	%MT	% HT	Day %	Eve %	Night %	Offset (dB)
1	Clement Street	43 Avenue	42 Avenue	509	30	50	98	1	1	80		20	
2	Clement Street	42 Avenue	34 Avenue	675	30	50	98	1	1	80		20	
3	Clement Street	43 Avenue	48 Avenue	370	30	50	98	1	1	80		20	
4	43 Avenue	Clement Street	Point Lobos Avenue	388	30	50	98	1	1	80		20	
5	42 Avenue	Clement Street	Point Lobos Avenue	182	30	50	98	1	1	80		20	

Appendix F

Traffic Noise Prediction Model, (FHWA RD-77-108)

Predicted Noise Levels

AECOM

Project Name : SFVAMC LRDP Final EIS
Project Number : 60208383
Modeling Condition : 2020 Short-term Alternatives 1 and 2
Metric (Leq, Ldn, CNEL) : Ldn

		Segment		Noise Levels, dB Ldn				Distance to Traffic Noise Contours, Feet				
Segment	Roadway	From	To	Auto	MT	HT	Total	70 dB	65 dB	60 dB	55 dB	50 dB
1	Clement Street	43 Avenue	42 Avenue	60.0	50.7	57.8	62.4	9	27	86	272	861
2	Clement Street	42 Avenue	34 Avenue	61.2	51.9	59.0	63.6	11	36	114	361	1142
3	Clement Street	43 Avenue	48 Avenue	58.6	49.3	56.4	61.0	6	20	63	198	626
4	43 Avenue	Clement Street	Point Lobos Avenu	58.8	49.5	56.6	61.2	7	21	66	207	656
5	42 Avenue	Clement Street	Point Lobos Avenu	55.5	46.2	53.3	57.9	3	10	31	97	308

Appendix F

Traffic Noise Prediction Model, (FHWA RD-77-108)

Model Input Sheet

Project Name : SFVAMC LRDP Final EIS
Project Number : 60208383
Modeling Condition : 2027 Long-term Alternatives 1 and 2
Ground Type : Hard
K Factor : 10
Metric (L_{eq}, L_{dn}, CNEL) : Ldn
Traffic Desc. (Peak or ADT) : Peak

Segment	Roadway	Segment From	Segment To	Traffic Vol.	Speed (Mph)	Distance to CL	% Autos	%MT	% HT	Day %	Eve %	Night %	Offset (dB)
1	Clement Street	43 Avenue	42 Avenue	565	30	50	98	1	1	80		20	
2	Clement Street	42 Avenue	34 Avenue	768	30	50	98	1	1	80		20	
3	Clement Street	43 Avenue	48 Avenue	400	30	50	98	1	1	80		20	
4	43 Avenue	Clement Street	Point Lobos Avenue	446	30	50	98	1	1	80		20	
5	42 Avenue	Clement Street	Point Lobos Avenue	258	30	50	98	1	1	80		20	

Appendix F

Traffic Noise Prediction Model, (FHWA RD-77-108)

Predicted Noise Levels

Project Name : SFVAMC LRDP Final EIS
Project Number : 60208383
Modeling Condition : 2027 Long-term Alternatives 1 and 2
Metric (Leq, Ldn, CNEL) : Ldn

		Segment		Noise Levels, dB Ldn				Distance to Traffic Noise Contours, Feet				
Segment	Roadway	From	To	Auto	MT	HT	Total	70 dB	65 dB	60 dB	55 dB	50 dB
1	Clement Street	43 Avenue	42 Avenue	60.5	51.1	58.3	62.8	10	30	96	302	955
2	Clement Street	42 Avenue	34 Avenue	61.8	52.5	59.6	64.1	13	41	130	411	1299
3	Clement Street	43 Avenue	48 Avenue	59.0	49.6	56.8	61.3	7	21	68	214	676
4	43 Avenue	Clement Street	Point Lobos Avenu	59.4	50.1	57.2	61.8	8	24	75	239	754
5	42 Avenue	Clement Street	Point Lobos Avenu	57.1	47.7	54.8	59.4	4	14	44	138	436

Appendix F

Traffic Noise Prediction Model, (FHWA RD-77-108)

Model Input Sheet

Project Name : SFVAMC LRDP Final EIS
Project Number : 60208383
Modeling Condition : 2040 Cumulative Alternatives 1 and 2
Ground Type : Hard **K Factor :** 10
Metric (L_{eq}, L_{dn}, CNEL) : Ldn **Traffic Desc. (Peak or ADT) :** Peak

Segment	Roadway	Segment From	Segment To	Traffic Vol.	Speed (Mph)	Distance to CL	% Autos	%MT	% HT	Day %	Eve %	Night %	Offset (dB)
1	Clement Street	43 Avenue	42 Avenue	599	30	50	98	1	1	80		20	
2	Clement Street	42 Avenue	34 Avenue	813	30	50	98	1	1	80		20	
3	Clement Street	43 Avenue	48 Avenue	426	30	50	98	1	1	80		20	
4	43 Avenue	Clement Street	Point Lobos Avenue	474	30	50	98	1	1	80		20	
5	42 Avenue	Clement Street	Point Lobos Avenue	270	30	50	98	1	1	80		20	

Appendix F

Traffic Noise Prediction Model, (FHWA RD-77-108)

Predicted Noise Levels

Project Name : SFVAMC LRDP Final EIS
Project Number : 60208383
Modeling Condition : 2040 Cumulative Alternatives 1 and 2
Metric (Leq, Ldn, CNEL) : Ldn

		Segment		Noise Levels, dB Ldn				Distance to Traffic Noise Contours, Feet				
Segment	Roadway	From	To	Auto	MT	HT	Total	70 dB	65 dB	60 dB	55 dB	50 dB
1	Clement Street	43 Avenue	42 Avenue	60.7	51.4	58.5	63.1	10	32	101	320	1013
2	Clement Street	42 Avenue	34 Avenue	62.0	52.7	59.8	64.4	14	43	137	435	1375
3	Clement Street	43 Avenue	48 Avenue	59.2	49.9	57.0	61.6	7	23	72	228	720
4	43 Avenue	Clement Street	Point Lobos Avenu	59.7	50.4	57.5	62.0	8	25	80	253	802
5	42 Avenue	Clement Street	Point Lobos Avenu	57.3	47.9	55.0	59.6	5	14	46	144	457

Appendix F
Traffic Noise Prediction Model, (FHWA RD-77-108)
Model Input Sheet

Project Name : SFVAMC LRDP Final EIS
Project Number : 60208383
Modeling Condition : 2040 Cumulative Alternative 3
Ground Type : Hard **K Factor :** 10
Metric (L_{eq}, L_{dn}, CNEL) : Ldn **Traffic Desc. (Peak or ADT) :** Peak

Segment	Roadway	Segment From	Segment To	Traffic Vol.	Speed (Mph)	Distance to CL	% Autos	%MT	% HT	Day %	Eve %	Night %	Offset (dB)
1	Clement Street	43 Avenue	42 Avenue	561	30	50	98	1	1	80		20	
2	Clement Street	42 Avenue	34 Avenue	743	30	50	98	1	1	80		20	
3	Clement Street	43 Avenue	48 Avenue	409	30	50	98	1	1	80		20	
4	43 Avenue	Clement Street	Point Lobos Avenue	425	30	50	98	1	1	80		20	
5	42 Avenue	Clement Street	Point Lobos Avenue	200	30	50	98	1	1	80		20	

Appendix F

Traffic Noise Prediction Model, (FHWA RD-77-108)

Predicted Noise Levels

Project Name : SFVAMC LRDP Final EIS
Project Number : 60208383
Modeling Condition : 2040 Cumulative Alternative 3
Metric (Leq, Ldn, CNEL) : Ldn

		Segment		Noise Levels, dB Ldn				Distance to Traffic Noise Contours, Feet				
Segment	Roadway	From	To	Auto	MT	HT	Total	70 dB	65 dB	60 dB	55 dB	50 dB
1	Clement Street	43 Avenue	42 Avenue	60.4	51.1	58.2	62.8	9	30	95	300	949
2	Clement Street	42 Avenue	34 Avenue	61.7	52.3	59.4	64.0	13	40	126	397	1257
3	Clement Street	43 Avenue	48 Avenue	59.1	49.7	56.8	61.4	7	22	69	219	692
4	43 Avenue	Clement Street	Point Lobos Avenu	59.2	49.9	57.0	61.6	7	23	72	227	719
5	42 Avenue	Clement Street	Point Lobos Avenu	56.0	46.6	53.7	58.3	3	11	34	107	338

Appendix F

Traffic Noise Prediction Model, (FHWA RD-77-108)

Model Input Sheet

Project Name : SFVAMC LRDP Final EIS
Project Number : 60208383
Modeling Condition : 2020 Short-term Alternative 4
Ground Type : Hard
K Factor : 10
Metric (**L_{eq}, L_{dn}, CNEL**) **:** Ldn
Traffic Desc. (Peak or ADT) : Peak

Segment	Roadway	Segment From	To	Traffic Vol.	Speed (Mph)	Distance to CL	% Autos	%MT	% HT	Day %	Eve %	Night %	Offset (dB)
1	Clement Street	43 Avenue	42 Avenue	491	30	50	98	1	1	80		20	
2	Clement Street	42 Avenue	34 Avenue	655	30	50	98	1	1	80		20	
3	Clement Street	43 Avenue	48 Avenue	364	30	50	98	1	1	80		20	
4	43 Avenue	Clement Street	Point Lobos Avenue	361	30	50	98	1	1	80		20	
5	42 Avenue	Clement Street	Point Lobos Avenue	176	30	50	98	1	1	80		20	

Appendix F
Traffic Noise Prediction Model, (FHWA RD-77-108)
Predicted Noise Levels

Project Name : SFVAMC LRDP Final EIS
Project Number : 60208383
Modeling Condition : 2020 Short-term Alternative 4
Metric (Leq, Ldn, CNEL) : Ldn

		Segment		Noise Levels, dB Ldn				Distance to Traffic Noise Contours, Feet				
Segment	Roadway	From	To	Auto	MT	HT	Total	70 dB	65 dB	60 dB	55 dB	50 dB
1	Clement Street	43 Avenue	42 Avenue	59.9	50.5	57.6	62.2	8	26	83	263	830
2	Clement Street	42 Avenue	34 Avenue	61.1	51.8	58.9	63.5	11	35	111	350	1108
3	Clement Street	43 Avenue	48 Avenue	58.6	49.2	56.3	60.9	6	19	62	195	616
4	43 Avenue	Clement Street	Point Lobos Avenu	58.5	49.2	56.3	60.9	6	19	61	193	610
5	42 Avenue	Clement Street	Point Lobos Avenu	55.4	46.1	53.2	57.7	3	9	30	94	298

Appendix G

Climate Risk Screening Study

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Memorandum

To	Robin Flanagan	Pages	26
Subject	San Francisco Veterans Affairs Medical Center Long Range Development Plan—Climate Risk Screening		
From	Kelsey Bennett, MPA, LEED-AP Yanna Badet, LEED-AP		
Cc	David Reel Michael Nolan		
Date	November 3, 2014		

This memorandum summarizes climatic risk factors for the San Francisco Veterans Affairs Medical Center (SFVAMC) existing Fort Miley Campus and potential Mission Bay Campus assets as relevant for the proposed Long Range Development Plan. The risk factors consider current climatic trends and predicted future changes in climate specific to the San Francisco Bay Area. Several opportunities to reduce climatic risks are also provided for consideration by VA. The memorandum covers climate change factors and trends, then screens climatic risk for the Fort Miley Campus and potential Mission Bay Campus, and finally provides a range of conclusions and opportunities for supporting long range development planning. In addition, a climate risk factors sensitivity screening matrix is provided as Appendix 1.

Climate Change Factors and Trends

Given that 1) carbon dioxide (CO_2) accounts for more than 75 percent of all anthropogenic GHG emissions, 2) atmospheric residence time of CO_2 is decades to centuries, and 3) the global atmospheric concentrations of CO_2 continue to increase and at a faster rate than ever previously recorded, the warming impacts of CO_2 will persist for hundreds of years after mitigation efforts to reduce GHG concentrations are implemented. Substantially higher temperatures, more extreme wildfires, and rising sea levels are just some of the direct impacts experienced in California (CNRA, 2009; CEC, 2012). As reported by the California Natural Resources Agency in 2009, despite annual variations in weather patterns, California has seen a trend of increased average temperatures, more extreme hot days, fewer cold nights, longer growing seasons, less winter snow, and earlier snowmelt and rainwater runoff. Statewide average temperatures have increased by about 1.7 degrees Fahrenheit (°F) from 1895 to 2011, and a larger proportion of total precipitation is falling as rain instead of snow (Moser, Ekstrom, and Franco, 2012). Sea levels rose by as much as seven inches along the California coast over the last century, increasing erosion and adding pressure to the state's infrastructure, water supplies, and natural resources.

These observed trends in California's climate are projected to continue in the future. Research indicates that California will experience overall hotter and drier conditions with a continued reduction in winter snow (with concurrent increases in winter rains), as well as increased average temperatures, and accelerating sea level rise. In addition to changes in average temperatures, sea level, and precipitation patterns, the frequency, intensity, and duration of extreme weather events such as heat waves, wildfires, droughts, and floods will also change (CNRA, 2009). Thus, even though the Proposed Action would result in less future operational GHG emissions (due to construction of new buildings to LEED Silver rating), the proposed ongoing medical center operation designed for long-term utility under the Proposed Action could be unprepared for inevitable climate change factors that would occur from climate change and could, thus, harm persons, property, and operations. Following is a summary of climate change factors and predicted trends specific to the San Francisco Bay Area, using the latest information available as of 2014.

Temperature/Heat

The San Francisco Bay Area is expected to experience warming over the rest of the 21st century. Consistent with statewide projections, annual average temperature in the Bay Area will likely increase by 2.7°F between 2000 and 2050 based on GHG emissions that have already been emitted into the atmosphere. By the end of the century, the increase in annual average temperature in the Bay Area may range from approximately 3.5°F to 11°F relative to the average annual temperature simulated for the 1961–1990 baseline period, depending on the GHG emissions scenarios (Cayan et al., 2012). The projected rate of warming, especially in the latter half of the 21st century, is considerably greater than warming rates derived from historical observed data.

Specific factors related to temperature/heat are summarized below.

- An increase in annual average temperature in the Bay Area has been occurring over the last several decades.
- The Bay Area is expected to see an increase in average annual temperature of 2.7°F by 2050, and 3.5°F to 11°F by 2100. Projections show a greater warming trend during the summer season. The coastal parts of the Bay Area will experience the most moderate warming trends, and locally, San Francisco is expected to see an increase of approximately 2.2°F by 2050, and 3.3°F to 5.5°F by 2100 (Cal-Adapt, 2013).
- Extreme heat events are expected to increase in duration, frequency, and severity by 2050. Extreme freeze events are expected to decrease in frequency and severity by 2100, but occasional colder-than-historical events may occur by 2050. (Cal-Adapt, 2013).

Precipitation/Rainfall/ Extreme Events

Recent studies on the effect of climate change on the long-term average precipitation for the state of California show some disagreement (e.g., Dettinger, 2005; Cayan et al., 2008; CEC, 2012; Pierce et al., 2013a, 2013b). Considerable variability exists across individual models, and examining the average changes can mask more extreme scenarios that project much wetter or drier conditions. California is expected to maintain a Mediterranean climate through the next century, with dry summers and wet winters that vary between seasons, years, and decades. Wetter winters and drier springs are also expected, but overall annual precipitation is not projected to change significantly (Pierce et al., 2013a). By mid-century, more precipitation is projected to occur in winter in the form of less frequent but larger events (Pierce et al., 2013a, 2013b). By 2100, the majority of global climate models predict drying trends across the state (Moser et al., 2012; USGCRP, 2009; CNRA, 2009).

Specific factors related to precipitation/rainfall/extreme events are summarized below.

- Historical precipitation in the Bay Area has experienced no significant changes in rainfall depth or intensities over the past 30 years.
- The Bay Area will continue to experience a Mediterranean climate, with little change projected in annual precipitation by 2050, although a high degree of variability may persist.
- By 2100, an annual drying trend in annual precipitation is projected. The greatest decline is expected to occur during the spring months, while minimal change is expected during the winter months.
- Increases in drought duration and frequency coupled with higher temperatures, as experienced in 2012, 2013, and 2014, increases the likelihood of wildfires.
- California is expected to see increases in the magnitude of extreme events, including increased precipitation delivered from atmospheric river events, which would bring high levels of rainfall during short time periods – increasing the chance of flash floods. The Bay Area is also expected to see an increase in precipitation intensities, but possibly through less frequent events (Cayan et al., 2008).

Sea Level

This summary draws on the best available data for climate science and the potential effects of sea level rise in California as of 2014. In March 2013, the Ocean Protection Council adopted the 2012 National Research Council (NRC) Report *Sea-level Rise for the Coasts of California, Oregon, and Washington: Past Present and Future* as the best available science on sea level rise for the state (OPC, 2013). The California Coastal Commission also supported the use of the NRC 2012 report as best available current science, noting that the science of sea level rise is continually advancing, and future research may enhance the scientific understanding of how the climate is changing, resulting in updating sea-level-rise projections (CCC, 2013, in review). The NRC report includes discussions of historic sea-level-rise observations, three sea-level-rise projections for the coming century, and insight into the potential impacts of a rising sea for the California coast.

Additional resources provide information on sea level rise and impacts specific to California and the Bay Area. These include peer-reviewed academic articles, the California Coastal Commission *Draft Sea-Level Rise Policy Guidance* (public review draft released on October 14, 2013), and globally relevant information from the latest release of the IPCC Fifth Assessment Report, for which the summary for policymakers was released on September 27, 2013.

Records from satellite altimeters, tide gauges, and ocean temperature measurements infer a long-term increase in sea levels of the Pacific Coast. It is estimated that on average, the coast of California has experienced 8 inches (20 centimeters) of sea level rise over the past century, which is comparable to the global average (CCC, 2013, in review).

The most recent climate science report, *Sea Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future*, has estimated that sea levels along the U.S. Pacific Coast would increase up to 66 inches by 2100 (NRC, 2012).

Specific factors related to precipitation/rainfall/extreme events are summarized below.

- Global sea level has risen 8 inches over the past century.[1]
- Based on the latest IPCC report, the Fifth Assessment Report, global sea level is now expected to rise an additional 11–39 inches by 2100.

According to the latest NRC report, the Bay Area is expected to see 11 additional inches (range of 5–24 inches) of sea level rise by 2050, and approximately 36 inches (range of 17–66 inches) by 2100 (NRC, 2012). The likelihood of sea level rise to occur by certain timeframes is described as:

- 12 inches of sea level rise is "most likely" by 2050;
- 24 inches of sea level rise by 2050 represents the upper uncertainty bound;
- 36 inches of sea level rise "most likely" by 2100;
- 48 inches of sea level rise by 2100 is within the upper 85% confidence interval; and
- 66 inches of sea level rise by 2100 represents the upper uncertainty bound (NRC, 2012).

See Figure 1 for an overview map of projected sea level rise in the San Francisco Bay Area. The figure shows Sea Level Rise inundation for 66 inches of SLR for the City and County of San Francisco and was prepared by AECOM for the San Francisco Public Utilities Commission (SFPUC) in 2014. More recent projections, new coastal mapping data, and innovations in modeling additional impacts such as storm effects, have made the sea level rise mapping and affected areas more precise since the Bay Conservation and Development Commission (BCDC) published its sea level rise maps in 2009.

The additional sea level rise figures generated for this Climate Risk Screening Memo present the most recent data and projections for sea level rise for the Bay Area. They were created using the mapping data developed by AECOM for the SFPUC. The City and County of San Francisco intend to make these the "official" sea level rise maps for all city departments planning adaptation to SLR.[2]

[1] For trends in mean sea level as captured at San Francisco's tide gauge. (NOAA, 2013c).
[2] Per email correspondence with Anna Roche, Climate Change and Special Projects Manager, Wastewater Enterprise – Planning and Regulatory, San Francisco Public Utilities Commission on August 21, 2014.

Figure 1: Projected Sea level Rise Map for the San Francisco Bay showing inundation areas for a 66 inch sea level rise

Source: SFPUC, 2014

Note: The sea level rise inundation mapping and supporting technical information were developed by AECOM for the San Francisco Public Utilities Commission's Wastewater Enterprise as part of its Sewer System Improvement Program. SFPUC provided the mapping to VA for use in this Climate Risk Screening Study.

SFVAMC LRDP Climate Risk Screening

See the climate risk factors sensitivity screening matrix in Appendix 1 for an overview of assets and project elements and how they may be affected by climate change effects. The descriptions below further explain the findings shown in the overview table for the Fort Miley and potential Mission Bay project locations.

Potential Site Location related Climate Change Impacts

SFVAMC Fort Miley

The existing SFVAMC Fort Miley Campus is a 29-acre site located in the northwestern corner of San Francisco, adjacent to the outer Richmond District neighborhood. The land is federal land owned by VA and is exempt from planning regulations of the City and County of San Francisco. The Campus is bounded by Clement Street/Seal Rock Drive and the outer Richmond District neighborhood to the south, and property owned by the National Park Service (NPS) to the north, east, and west. The current uses of the existing Campus include a hospital, hoptel facilities, medical clinics, research facilities, administration/office buildings, childcare facilities, and parking facilities.

The western portion of the existing SFVAMC Fort Miley Campus is located within the California Coastal Zone, which is under the jurisdiction of the California Coastal Commission.

Sea Level Rise Exposure

The SFVAMC Fort Miley campus, despite being partially located in the coastal zone, located in distance only about 600 feet from the Ocean's edge, is located on bedrock substrate at about 350ft elevation, and thus protected from the direct (inundation) and indirect (liquefaction due to underneath soil saturation) effects of Sea Level Rise.

Storm Exposure

In its location, the SFVAMC Fort Miley Campus is rather exposed facing the Pacific Ocean, which could play a role in exposure to increased rainfall events and potentially more and/or stronger storms (through stronger wind and rainfall impacts).

Erosion

There is a steep topographical gradient on northern side of SFVAMC Fort Miley Campus as it descends to GGNRA lands. In addition, this is the only part of the Campus that is not connected to the SFPUC combined wastewater/stormwater system; as such, stormwater runs of the northern edge of the Campus over the northern slope, which could lead to erosion and landslip, especially should extreme rainfall events occur with increased frequency and or/ intensity.

Flooding/Soil Saturation

Soil saturation could occur on northern side of Campus during severe and/or prolonged rainfall events.

Wildfire Threat

The Fort Miley Campus is located at the wildland urban interface (ABAG, 2014), as shown in Figure 2, and surrounded on three sides by forested public land belonging to the National Park Service Golden Gate National Recreation Area (GGNRA), with an identified wildfire threat of “high” and “very high” (CCSF, 2008). This existing wildfire threat could further intensify, if droughts and extreme temperature events increase in severity.

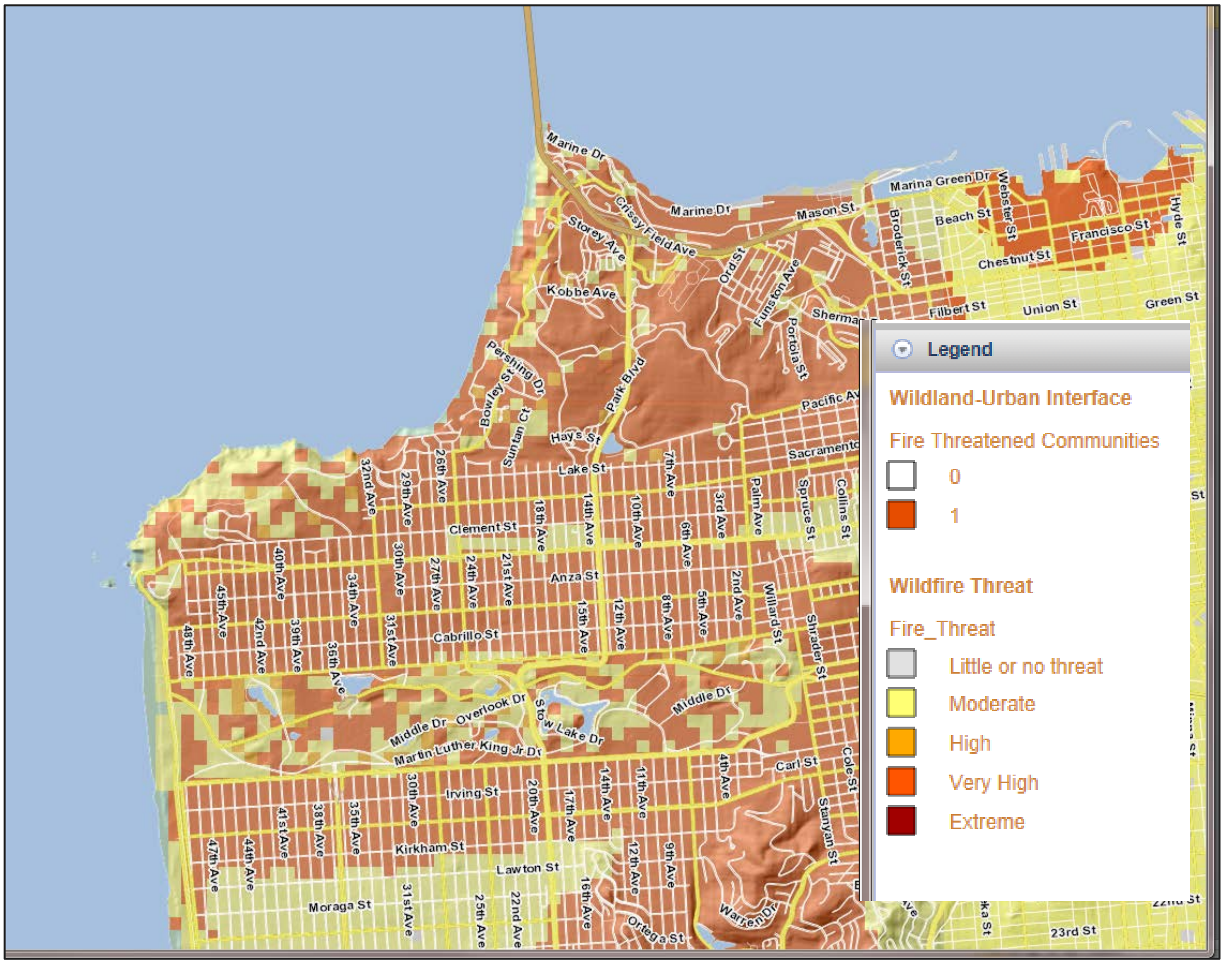

Figure 2: Earthquake and Hazards Program Interactive Map showing Wildland Urban Interface and Wildfire Threats for the Fort Miley Campus Area
Source: ABAG, 2014

<u>Mission Bay Area</u>

For purposes of this Memorandum, the Mission Bay area includes an approximately 2.5-square-mile area bounded by Market Street on the north, Second Street and San Francisco Bay on the east, Cesar Chavez Street on the south, and Seventh/Brannan/Potrero Streets on the west. This area of San

Francisco is commonly known as a combination of the South of Market Area (SOMA), Potrero Hill, and Mission Bay. SOMA is an area with a mix of residential, office, institutional, commercial, retail, entertainment, and public uses. Potrero Hill is a neighborhood that is bordered by freeways (Interstate 280 to the east and U.S. Highway 101 and Interstate 80 to the west) and contains a mix of residential, retail, and industrial uses. Mission Bay is a major redevelopment area of the city with a mix of vacant land, biotech research facilities (including the University of California, San Francisco Mission Bay Campus), residential, and warehouse uses.

Sea Level Rise and Storm Surge Exposure

The potential SFVAMC Mission Bay Campus could be located on the Bayside and built on fill. The Mission Bay area is not considered to be within a wildland urban interface or vulnerable to the threat of wildfire as shown in Figure 3, however the lower elevation of the area considered 'Mission Bay' make it vulnerable to Sea Level rise, in particular in combination with a storm surge and/or extreme rainfall events by mid and end-of-century. Figures 4 through 6 show detailed Sea Level Rise Analysis maps for 24", 36", and 66" sea level rise scenarios respectively for the eastern half of San Francisco which encompasses the Mission Bay area.

The water levels on the inundation maps show an increase in future Mean Higher High Water (MHHW)[3] up to 66 inches (sea level rise about existing MHHW) and areas that could be inundated permanently on a regular basis by tidal action. In contrast, temporary flooding can occur when an area is exposed to episodic, short duration, extreme tide events of greater magnitude than normal tide levels. The combinations of sea level rise and storm surge scenarios that can be represented by each inundation map are listed below the permanent inundation scenario. The inundation maps for extreme tide and storm surge scenarios do not consider the duration of flooding, or the potential mechanism for draining the floodwaters from the inundated land once the extreme high tide levels recede.

In addition, hydraulically disconnected low-lying areas are displayed in green. These areas do not have an effective overland flow path to allow water to reach the area, although these areas have topographic elevations below the inundated water surface. It is possible that the low-lying areas are connected through culverts, storm drains, or other hydraulic features which are not captured within the topographic digital elevation model (DEM); therefore it is important to note that there may be an existing or future flood risk within these areas. It should be noted that all inundation maps are associated with caveats and uncertainties. Inundation maps, and the underlying associated analyses, are intended as planning level tools to illustrate the potential for flooding under future sea level rise and storm surge scenarios. Although this information is appropriate for conducting vulnerable and risk assessments, finer-grained information may be needed for detailed engineering design and implementation. Further details on the data and methods used to create the inundation maps, and the

[3] The average of the higher high water height of each tidal day observed over the National Tidal Datum Epoch, a specific 19-year period adopted by the National Ocean Service as the official time segment over which tide observations are taken and reduced to obtain mean values (e.g., mean lower low water, etc.) for tidal datums. It is necessary for standardization, because of periodic and apparent secular trends in sea level. (NOAA, 2013b).

associated caveats and uncertainties in the inundation mapping can be found in the Climate Stressors and Impacts: Bayside Sea Level Rise Mapping Technical Memorandum (SFPUC, 2014)**.**

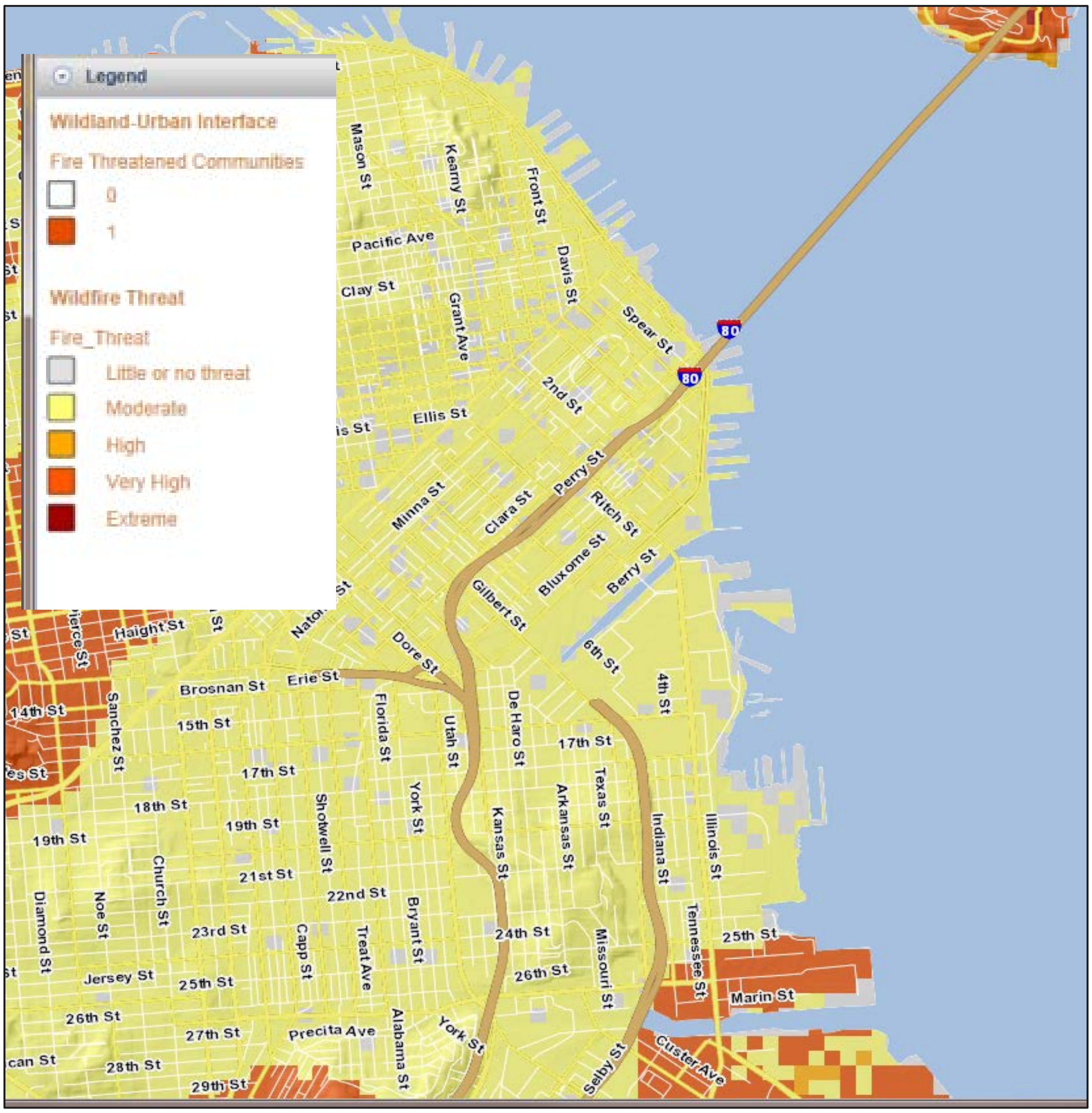

Figure 3: Earthquake and Hazards Program Interactive Map showing no Wildland Urban Interface or Wildfire Threats for the Mission Bay Area
Source: ABAG, 2014

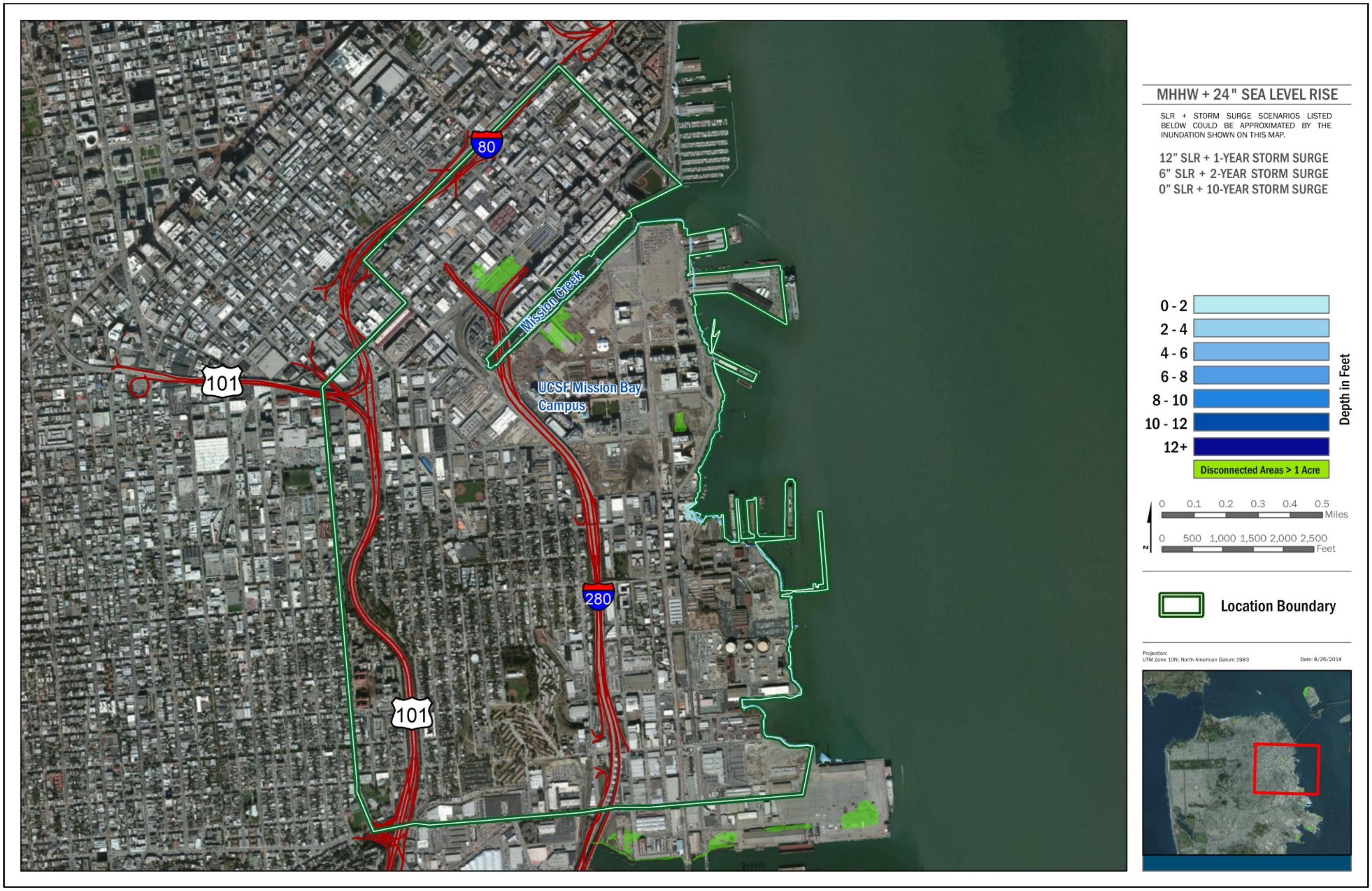

Figure 4: Eastern San Francisco Permanent Inundation Areas due to 24 Inches of Sea Level Rise or Temporary Inundation due to Storm Surge at Lower Levels of Sea Level Rise

Source: SFPUC, 2014

Note: The sea level rise inundation mapping and supporting technical information were developed by AECOM for the San Francisco Public Utilities Commission's Wastewater Enterprise as part of its Sewer System Improvement Program. SFPUC provided the mapping to VA for use in this Climate Risk Screening Study.

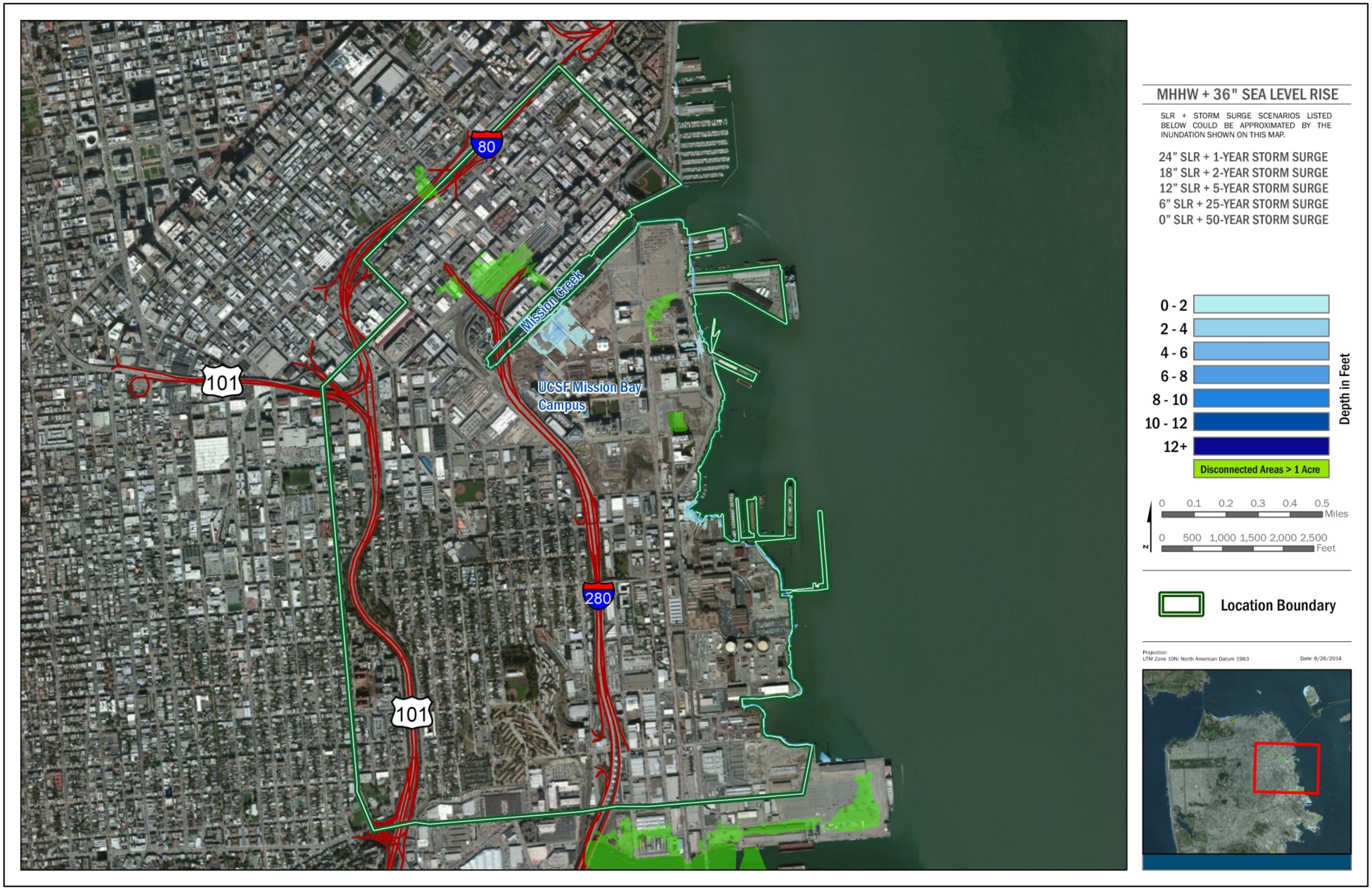

Figure 5: Eastern San Francisco Permanent Inundation Areas due to 36 Inches of Sea Level Rise or Temporary Inundation due to Storm Surge at Lower Levels of Sea Level Rise

Source: SFPUC, 2014

Note: The sea level rise inundation mapping and supporting technical information were developed by AECOM for the San Francisco Public Utilities Commission's Wastewater Enterprise as part of its Sewer System Improvement Program. SFPUC provided the mapping to VA for use in this Climate Risk Screening Study.

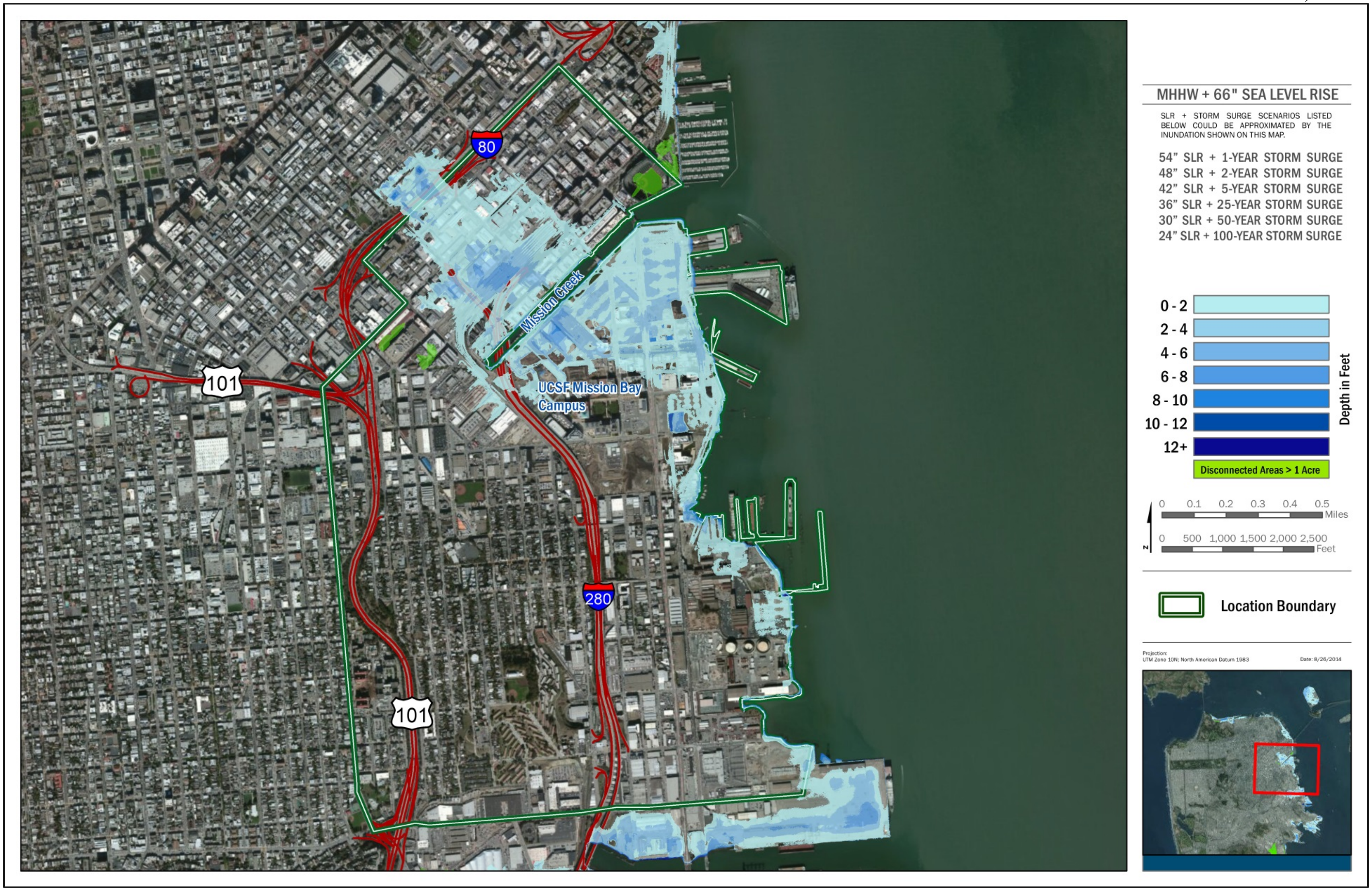

Figure 6: Eastern San Francisco Permanent Inundation Areas due to 66 Inches of Sea Level Rise or Temporary Inundation due to Storm Surge at Lower Levels of Sea Level Rise.

Source: SFPUC, 2014

Note: The sea level rise inundation mapping and supporting technical information were developed by AECOM for the San Francisco Public Utilities Commission's Wastewater Enterprise as part of its Sewer System Improvement Program. SFPUC provided the mapping to VA for use in this Climate Risk Screening Study.

As these maps show, a significant portion of the potential SFVAMC Mission Bay Campus development area is at risk for temporary inundation in the short term during storm events and permanent inundation in the longer term. The worst case scenario for end-of century, combining sea level rise of 66 inches (in addition to MHHW) with the event of a 100-year storm surge, has not been mapped.

Liquefaction

The location of the potential SFVAMC Mission Bay Campus on fill could also cause the groundwater level to rise through sea level rise, which in turn could increase the risk of liquefaction and related increased shaking potential/ instability of assets during a seismic event.

Storm Exposure

The potential SFVAMC Mission Bay Campus, located on the east side of the San Francisco Peninsula and facing the San Francisco Bay, is much less exposed to the open ocean. However, being located at low elevation, the increased likelihood of storm surge[4] coupled with Sea Level Rise could intensify temporary inundation (see Figures 4 through 6).

Potential Energy Related Climate Change Impacts

SFVAMC Fort Miley

The main electric service provider is Pacific Gas & Electric (PG&E), although VA is increasingly adding renewable energy sources, such as solar power and geothermal heating and cooling generation for its Fort Miley Campus. In addition, the SFVAMC's electrical needs are also supported by an existing backup power system consisting of three stationary engine generators, which serve as critical and life-safety loads for Buildings 200 and 203, and all other critical loads on the existing SFVAMC Fort Miley Campus in Building 205, as well as a generator in Building 17 that supplies back-up power. One portable trailer-mounted 1,000-kW engine-generator is available for use in the event of failure at any stationary unit. The overall total backup power system capacity is more than 50 percent of the expected full future load, making the backup system's capacity adequate to support future critical and life-safety power needs.

SFVAMC Fort Miley Campus still receives most of its electricity through the existing power distribution system, which consists of PG&E service cables, metal-clad switchgear, substations and load centers, various switchboards, panel boards, and motor control centers. From 2006 through 2011, the Campus had an average electricity demand of approximately 22,144 megawatt-hours (MWh) per year.

[4] Storm surge is the abnormal rise in seawater level during a storm, measured as the height of the water above the normal predicted astronomical tide. The surge is caused primarily by a storm's winds pushing water onshore. The amplitude of the storm surge at any given location depends on the orientation of the coast line with the storm track; the intensity, size, and speed of the storm; and the local bathymetry. (NOAA 2013a)

A new 255kW solar photo-voltaic (PV) system was installed in the fall of 2013. The solar canopy consists of 1,022 Samsung modules integrated into a steel structure that was built on top of an existing parking garage. In addition to providing clean, renewable energy, the solar canopy also creates additional shaded parking for 85 vehicles. In addition, Ground Source Heat Pump (GSHP) systems (i.e., geothermal systems) were installed in June 2012 to help VA meet the overall federal goal of increased renewable energy use at the VA medical centers. These systems function by transferring heat between the steady temperature of the earth (approximately 57° F in the SFVAMC Fort Miley area) and site buildings, providing a source of heating during the winter and a means to reject excess heat (cooling) in the summer. In the closed-loop system that was installed in several buildings, heat transfer occurs via circulating a fluid (i.e., typically water) between a loop of pipe buried in the ground and a heat pump at or in the building (VA, 2011).

Change in extreme temperature events

Extreme heat events conditions are defined by summertime weather that is substantially hotter and/or more humid than average for a location at that time of year (EPA, 2006). These conditions, which can increase the incidence of mortality and morbidity in affected populations, are expected to increase in duration, frequency, and severity by 2050, potentially affecting specific high-risk groups[5] such as Veteran patients, especially elderly persons and extremely ill persons. Due to San Francisco's temperate climate, most people don't view San Francisco as a place of concern for extreme heat events, but San Francisco is vulnerable due to the lack of physiologic and technologic adaptations. It typically takes human biology two weeks to adapt to temperature extremes. Since San Francisco does not regularly experience extreme heat events for extended durations, as a population, residents bodies have a more difficult time thermo-regulating, which can cause heat stress and increase risk of heat related illness and sometimes death. In San Francisco, there are also generally fewer technologic adaptations, because the housing stock is less likely to have central air conditioning due to its age and the typically cooler climate (SFDPH, 2010).

A surface temperature map for the City of San Francisco depicted in a report prepared for the Department of Health (SFDPH, 2010) identifies the western portion of San Francisco, including the SFVAMC area as having cooler existing surface temperatures than the eastern portion of the city, in particular in the vegetated open space areas, confirming the heat island effect. The proximity to vegetated open spaces and cloud/fog cover influence cooler surface temperatures, contrasted by higher surface temperatures in built environments portions of the city, including the Mission Bay Area.

[5] Specific high-risk groups typically experience a disproportionate number of health impacts from EHE conditions. The populations that have physical, social, and economic factors and the specific actions that make them at high risk include: Older persons (age > 65), Infants (age < 1), the homeless, The poor, People who are socially isolated, people with mobility restrictions or mental impairments, people taking certain medications (e.g., for high blood pressure, depression, insomnia), people engaged in vigorous outdoor exercise or work or those under the influence of drugs or alcohol. (EPA 2006)

The forecasted increase in extreme heat events due to climate change, with increasingly multi-day-periods of hot days and hot nights will likely have an effect on the electricity use of the SFVAMC to ensure safe temperatures for patients (high-risk groups) and staff, through HVAC use and supplementing the geothermal cooling mechanism, where necessary.

Also, coupled with increased drought durations, extreme heat events can increase the wildfire hazard of the adjacent wildland areas of the SFVAMC (see site location review above.)

Change in Intensity of Storms

An increase in storm events (strong winds and rain) could cause potential damage to the PV panels and exposed above-ground electrical conveyance assets (poles, cables).

Mission Bay

Electricity to the Mission Bay area is served by the Potrero and Embarcadero Substations. PG&E's primary distribution line rights-of-way run parallel with local streets.

Sea Level Rise and Storm Surge Exposure

PG&E' electricity conveyance assets such as substations, cables, low-lying switchboxes and vaults may be susceptible to temporary and permanent inundation through seawater as a result of sea level rise, more frequent high tides and storm surges. Longer-term exposure to sea water may cause corrosion and water intrusion into the assets, which may result in power-outages and extended time for repairs (PG&E, 2013).

Potential Water related Climate Change Impacts

The existing SFVAMC Fort Miley Campus and the Mission Bay area are served by the San Francisco Public Utilities Commission (SFPUC). Approximately 96 percent of SFPUC's water supply is conveyed through the Regional Water System, which is made up of a combination of runoff into local Bay Area reservoirs and diversions from the Tuolumne River through the Hetch Hetchy Water and Power Project. A small portion of San Francisco's water demand is also met by locally produced groundwater and secondary-treated recycled water.

The Bay Area is forecasted to continue to experience a Mediterranean climate, with little change projected in annual precipitation by 2050, (although a high degree of variability may persist) and experiencing a drying trend by 2100. The greatest decline is expected to occur during the spring months, while minimal change is expected during the winter months. These predictions would likely impact the water supply which originates mostly from run-off.

SFVAMC Fort Miley

Water Supply and Wastewater

SFPUC provides water to the existing SFVAMC Fort Miley Campus. The water system infrastructure supporting the Campus, which serves the Campus's potable water and fire-suppression water needs, was originally constructed in 1934; however, several building additions and expansions, which also included expansions of the original water distribution system, have been completed since that time. The system distributes water throughout the Campus via a loop system. The system consists of the following components:

- One 500,000-gallon reservoir located in Building 29 (on the southwestern part of the Campus)
- Three pumps, including a primary pump (P-1), a secondary pump (P-2), and a fire pump (P-3) located in Building 30 (pump station) (adjacent to Building 29 on the southwestern part of the Campus)
- One 40,000-gallon water tower located in Building 206 (on the northwestern part of the Campus)

The reservoir is fed from the City's water distribution system through primary and secondary connection points located on Clement Street. From the reservoir, the primary and secondary pumps (P-1 and P-2) pressurize the existing SFVAMC Fort Miley Campus's loop water system and feed the water tower. The water tower back-feeds the distribution system when the pumps are not running. The water tower also holds 40,000 gallons of water for purposes of emergency backup water supply in case of an emergency that cuts off the Campus' water supply from SFPUC.

Between 2004 and 2011, the existing SFVAMC Fort Miley Campus had an average water demand of approximately 46.6 million gallons per year, or approximately 0.13 mgd.

Mission Bay

The total water demand associated with Alternative 2 long-term projects at the potential new SFVAMC Mission Bay Campus through 2027 is projected to be 23.7 million gallons per year (0.065 mgd). However, should the SFVAMC implement water conservation measures to achieve the VA SSPP's maximum reduction targets, the total water demand for Alternative 2 long-term projects at the potential new campus would be 19.0 million gallons per year (0.052 mgd).

The overall total (existing, short-term, and long-term) projected water demand at both campuses under Alternative 2 is estimated to be 80.6 million gallons per year (0.221 mgd). However, with implementation of conservation measures for existing, short-term, and long-term project water demands to meet the VA SSPP's maximum targets, the total projected water demand for both campuses under Alternative 2 would be 64.5 million gallons per year (0.177 mgd).

Water Supply

SFPUC is evaluating the potential implementation of the water enterprise and sewer system improvement program to address issues of aging infrastructure and system deficiencies related to climate change, and to improve operational efficiency and reduce community impacts.

Storm Water Management/ Offsite Discharge

San Francisco's wastewater collection and conveyance infrastructure is overseen by the SFPUC as well. This infrastructure consists of a combined sewer system that collects both sewage and stormwater, collecting, conveying, treating, and discharging all of the dry-weather domestic wastewater and urban runoff flows and wet-weather flows. The system uses natural watershed areas wherever possible to take advantage of gravity flow for the collection, transport, treatment, and discharge of wastewater and stormwater. (SFPUC, 2010). The wastewater and stormwater that flow to facilities for treatment are ultimately discharged into San Francisco Bay or the Pacific Ocean through outfall structures along the shoreline. (SFPUC, 2009).

SFVAMC Fort Miley

The existing sanitary sewer system at the SFVAMC Fort Miley Campus collects and conveys wastewater from building lateral connections to the site's combined sewer system and eventually to SFPUC's combined sewer interceptor on Clement Street. Stormwater runoff is collected from parking lots, streets, pedestrian walkways, landscaped areas, and building roofs. It is then concentrated in gutters and drain pipes and conveyed to SFPUC's combined sewer interceptor on Clement Street. A small separate storm drainage system conveys stormwater off-site on the north side of the Campus along the slope facing the Golden Gate Bridge.

Erosion

Major and minor landslides, as well as surface slumping, have historically occurred on the slope below the northern portion of the SFVAMC campus due to high rainfall, seismic movement, and land erosion. The North Slope Seismic/Geologic Stabilization Project was completed at the Campus to remove and replace the existing storm drain system that discharges stormwater onto the north slope. The pipelines discharge to energy dissipaters which reduce the erosional forces of the water. Two retaining walls were installed as part of the project and the slope gradient was reduced which lessened slide potential and eliminated areas where water previously ponded.

The energy dissipaters consist of rock rip-rap embedded in concrete and underlain with overlapping sheets of a puncture-resistant vapor barrier. The project also reduced the slope gradient which reduced slide potential and eliminated areas where water previously ponded. Two retaining walls were installed as part of the project and following construction, native shrubs and trees were planted below the retaining walls. A long-term monitoring and maintenance plan has been put into effect to maintain the drainage system in good repair so that it is effective in controlling localized erosion.

Despite the recent storm drain improvements which were completed as part of the North Slope Seismic/Geologic Stabilization Project, climate change related extreme rainfall conditions may exasperate the erosion issues in this area again.

Storm Exposure

Extreme rainfall events (such as Atmospheric River storms) may also increase in intensity, which in combination of a preceding drought could increase the likelihood of stormwater accumulation due to debris and blockages of usual effluents, as well as flash flooding, which could create temporary flooding and erosion issues beyond the known location at the north slope discussed above.

Mission Bay

Historically, the Mission Bay area was part of San Francisco Bay, with the bay waters at ordinary high tide roughly being bounded by Townsend Street on the north, Eighth Street on the west, and

16th Street on the south. Marshes, with intersecting sloughs, penetrated as far north as Mission Street between Seventh and Eighth Streets, and Folsom Street between Fourth and Eighth Streets. (Sharpsteen, 1941). Mission Creek once was a navigable body of water that flowed from Mission Dolores to San Francisco Bay. In 1854 the California Legislature declared Mission Creek to be a navigable stream; although it has been filled in, it retains the designation today (Sharpsteen, 1941). The only remaining portion of Mission Creek above ground is the Mission Creek Channel that drains into China Basin.

Stormwater from the Mission Bay area is part of the Bayside Drainage and is collected in the combined sewer system and treated at the City's Southeast Water Pollution Control Plant before being discharged to San Francisco Bay. Combined sewer transport and storage structures are located underground around the Mission Creek Channel and up the shoreline, and connecting pipes, tunnels, and force mains are used to transport flows to the Southeast Water Pollution Control Plant. As part of the Mission Bay Redevelopment Plans, a separate stormwater system is being developed in this area to handle flows generated from larger storms.

Sea Level Rise and Storm Surge Exposure

Sea-level rise, and in the short-term, storm surge, may cause backflows for stormwater and additionally impede the operation of the combined sewer system overflows, leading to flooding and pooling of un- or only minimally treated sewerage and storm water.

SFPUC is examining potential climate change and in particular Sea Level Rise effects on its Wastewater Infrastructure, as the vulnerability is increased in low-lying coastal areas. As the Sea Level Rise Maps produced for the SFPUC show, some of the important infrastructure, such as the Southeast Water Pollution Control Plant, the waste water treatment plant for the Mission Bay Area would likely be affected by Sea Level Rise related inundation by the end of century. Inundation with sea water would likely cause operational impacts, such as power outages, corrosion-related impacts and rendering the plant and important conveyance infrastructure inoperable.

Potential Transportation related Climate Change Impacts

In addition to the public transportation network and being able to arrive by private vehicle or taxi, SFVAMC provides a variety of local, regional, and intercity shuttle services through several different operating schemes, including services operated directly by SFVAMC staff, services operated jointly with the University of California San Francisco (UCSF), services contracted out to third-party for-profit companies (Bauer's Transportation), and services provided by the Disabled American Veterans (DAV) Volunteer Transportation Network (VTN). These services operate weekdays only (Mondays through Fridays) but serve a wide variety of Campus users, including patients, employees/staff, and visitors, as well as affiliated faculty, students, and guests of UCSF.

Storm Exposure

Extreme rainfall events may impede vehicular, bicycle and pedestrian traffic in the short term, and potentially cause flooding, water pooling, and longer term impacts by causing damage to the roadways.

Potential Building related Climate Change Impacts

SFVAMC Fort Miley

The 29-acre SFVAMC Fort Miley Campus contains 38 buildings and hosts a fluctuating daily population of approximately 5000 people, including around ~1500 temporary in-/outpatients and ~3500 employees, including UCSF staff.

Existing buildings include the following:

- One inpatient hospital building
- One outpatient clinical building
- Research buildings with sensitive medical research equipment
- Two "hoptel[6]" buildings (short-term patient accommodations)
- A Community Living Center
- Administrative/office buildings with sensitive medical information
- Various storage, infrastructure, and other facilities
- Parking garage structures
- Emergency Operations Center, which can function as regional emergency operations center in case of emergency
- A helipad at the northwestern corner of the Campus; which can be used for national emergency situations

Storm Exposure

The location on the bluff overlooking the Pacific Ocean, make some of the buildings more exposed to increased rainfall events and potentially more and/or stronger storms (through stronger wind and rainfall impacts).

Flooding/Soil Saturation/Drought

Soil saturation could occur on northern side of Campus during severe and/or prolonged rainfall events, leading to further erosion despite soil stabilization efforts. In contrast, long periods of droughts and extreme heat events in exchange with intense rainfall events may cause potential

[6] A hoptel is an overnight, shared lodging facility for eligible Veterans receiving health care services. This temporary lodging is available to Veterans who need to travel 50 or more miles from their home to the existing SFVAMC Fort Miley Campus.

impacts on the ground and some building materials (drying leading to cracking and moisture leading to expansion).

Wildfire Threat

As described above, The Fort Miley Campus is located at the wildland urban interface (ABAG 2014) and surrounded on three sides by forested public land belonging to the GGNRA, with an identified wildfire threat of “high” and “very high” (CCSF 2008). This existing wildfire threat could further intensify, if droughts and extreme temperature events increase in severity, also potentially threatening the buildings and infrastructure, such as emergency operations center and the use of the helipad (see site location review above.)

Change in Extreme Temperature Events

The forecasted increase in extreme heat events due to climate change, with increasingly multi-day-periods of hot days and hot nights will likely have an effect on the electricity use of the SFVAMC to ensure safe temperatures for patients (high-risk groups) and staff and sensitive medical research materials, through HVAC use and supplementing the geothermal cooling mechanism, where necessary.

Mission Bay

See Climate Change impacts discussion under “Site Location” above.

Potential Cultural Heritage related Climate Change impacts

SFVAMC Fort Miley

The existing SFVAMC Fort Miley Campus was formerly part of the Fort Miley Military Reservation on Point Lobos, which the U.S. Army acquired in 1893. In 1932, the U.S. Army transferred 25 acres (eventually 29 acres total) of land to VA for the Campus. The remaining portion of Fort Miley, east and west of the existing Campus, contains buildings and artillery bunkers and was not included in the land transfer to VA. These Fort Miley lands near the Campus, East Fort Miley and West Fort Miley, are owned by NPS and are part of the Golden Gate National Recreation Area (GGNRA) (NPS, 2011). East Fort Miley and West Fort Miley were listed in the National Register of Historic Places in 1980.

The northern and eastern portions of the SFVAMC Fort Miley Campus compose a historic district. This SFVAMC Fort Miley Historic District encompasses 12 acres of the Campus and contains 14 contributing buildings or structures (1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 18, 20, and the flagpole and base), and 11 noncontributing buildings or structures (14, 25, 26, T-27, T-28, 31, 32, 33, 202, 210, and 212). The boundaries of the historic district correspond to the areas that retain the highest degree of architectural integrity and historic landscaping. The period of significance for the historic district is 1934 to 1941.

Extreme Rainfall/Storm Exposure

The historic buildings are in moderate to good condition, however remain exposed to the decaying influence of weather. An increased risk of exposure to extreme rain fall events and storms (wind) through climate change may further impact the historic buildings in particular, for example by impacting the integrity of the roofing, creating internal flooding risk.

Wildfire Threat

As discussed above, increased drought frequency and extreme heat events may also result in an increased risk of exposure to wildfire from the surrounding wildlands.

<u>Mission Bay Area</u>

The Mission Bay area was originally an open bay and marshy area. Starting in the late 19th century, the area was filled in to allow for development as an industrial tract. Southern Pacific Railroad used the site for several decades and constructed several tracks and spurs in the immediate area. It remained industrial until into the late 20th century, when it was redeveloped to include more dense mixed-use buildings, consisting of high-end residences, retail establishments, offices, studios, and research facilities. Currently, this area is being developed with a 43-acre University of California, San Francisco (UCSF) Research Campus and a 14.5-acre UCSF Medical Center.

As the buildings for the SFVAMC in the Mission Bay Area are not yet constructed, cultural resource impacts from climate change are not applicable.

Potential Environment Related Climate Change Impacts

<u>SFVAMC Fort Miley</u>

Habitat within the SFVAMC Fort Miley Campus is largely developed and consists of landscaped and planted trees; however, the areas along the northern, eastern, and western perimeters of the Campus property are less developed. The vegetation assemblages observed on the property in 2008 and 2012 by AECOM staff were primarily nonnative and included a high-level tree canopy of Monterey pine (*Pinus radiata*) and Monterey cypress (*Cupressus macrocarpa)* (VA, 2010a). As mentioned in Chapter 2.0, "Alternatives," there are currently an estimated 232 trees within the landscaped portions of the Campus (VA, 2010b). Dominant tree species on the Campus include Monterey pine (71 individuals), purpleleaf plum (*Prunus cerasifera 'Atropurpurea'*; 25 individuals), Monterey cypress (21 individuals), Japanese flowering cherry (*Prunus serrula*; 19 individuals), and Lagunaria (*Lagunaria patersonii*; 17 individuals). The remaining trees consist of small numbers of various nonnative and native trees used as landscaping throughout the Campus. Large nonnative tree[7] cover comprises about 30.2 acres (nearly 50 percent of the study area). Cape ivy (*Delairea odorata*), a nonnative species, infested about 6.3 acres (or about 10 percent) of the study area.

Annual Rainfall/ Drought

Projected changes in reduced annual rainfall and increased frequencies of droughts and extreme heat events will likely increase the need for watering of trees and perennial plant cover to keep it alive.

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7 In the study, Monterey cypress and Monterey pine were considered "nonnative," because they are not historically native to the San Francisco Peninsula. Eucalyptus (*Eucalyptus globulus*) was the third most frequent nonnative tree species found.

<u>Mission Bay</u>

Mission Bay is an urban area that was developed for industrial uses including rail yards, truck terminals, construction-related operations, warehouses, and maritime activities. Development has occurred in the area, but vacant areas remain. Open areas of Mission Bay are vegetated predominantly with nonnative, annual species of grasses and forbs. The Mission Bay planning area encompasses the entire Mission Creek Channel (Figure 2-5 in Chapter 2.0, "Alternatives"). A minor amount of wetland vegetation in the form of a fringe of pickleweed (Salicornia virginica) occurs above the high-tide line on the unlined, dirt banks of the Mission Creek Channel. Nonnative annual grasses and forbs common to disturbed urban areas occur on the channel sides above the pickleweed. For the 1996 LRDP EIR Mission Bay, potential new sites were surveyed on foot to assess the potential for occurrence of sensitive species. Wildlife typical of the Mission Bay area includes domesticated rock dove (Columba livia) and muscovy duck (Cairina moschata), and common native bird species including mourning dove (Zenaida macroura), mallard (Anas platyrhynchos), and killdeer (Charadrius vociferous). Other species of native water birds would be expected to occur along the Mission Creek Channel, including egrets, herons, and ducks. (UCSF, 1996).

Because of the Mission Bay area's history of development and industrial uses, limited to no natural vegetation or habitat communities remain in the area. Waterfront in this area is generally developed and contains riprap, seawalls, or other development to control tidal influence from San Francisco Bay.

Annual Rainfall/ Drought

Projected changes in reduced annual rainfall and increased frequencies of droughts and extreme heat events will likely increase the need for watering of planted vegetation to keep it alive.

Sea Level Rise

As the high-tide line rises, the small patches of pickleweed may resettle on higher ground, if space is available or likely disappear, should hard protective surfaces (such as a sea wall) be constructed along the Mission Bay channel.

Conclusions/Opportunities for Planning Considerations

Fort Miley Campus

<u>Extreme Heat Events</u>

To adapt to extreme heat events, SFVAMC will need to ensure thermo-regulated environments in their buildings for their vulnerable patients and employees. This will likely require a high energy load while the rest of the City and County of San Francisco would have similar energy demand, which could add stress to the system (i.e., lead to brownouts). The existing geothermal cooling and generators remain important systems to ensure stable environments, however any planning measures that can be undertaken to reduce the heat island effect (e.g. through light-colored building materials that reflect heat instead of absorbing it, shading-structures, and planted areas) could help reduce future extreme heat event impacts and energy demand by lowering surface temperatures.

Wildfire Threat

- *Secure Buildings*
  - Update fire sprinkler systems
  - Update HVAC systems and geothermal cooling
  - implement LEED building credits/BMPs to reduce heat island effect
- *Secure Backup Electricity Needed to Ensure A/C During Heat Waves*
- *Secure Backup Water Supply/Water Tower*
- *Maintain Foliage on the Campus*
  - Ensure proper defensible space around perimeter of Fort Miley Campus
  - Annual foliage survey followed by thinning and/or removal actions if deemed hazardous, dying, or dead
  - Work with Other Jurisdictions/Agencies to Maintain Foliage On Their Adjacent Property

    VA should continue to coordinate with local jurisdictions (City and County of San Francisco and GGNRA) and agencies (California Coastal Commissions, SFPUC, and SF Recreation and Parks Department) in terms of adaptation to projected wildfire risk that could affect the SFVAMC Fort Miley Campus and the Veterans, employees, and public utilizing this Campus. Specifically, VA should work to protect existing and planned buildings, structures, and infrastructure within the Campus by maintaining and/or removing problematic foliage or contributing funding for such work and by renovating its infrastructure systems so that they are resilient and adaptable over time.

Mission Bay Area

Sea Level Rise

Adaptation strategies to projected sea level rise include mechanisms to protect and defend infrastructure and buildings already in place by constructing sea walls and levees or developing buildings and infrastructure that can adapt to the sea level (e.g., floating buildings and development).[8] Coordination with the City and County of San Francisco and the Bay Conservation and Development Commission to protect existing and planned buildings and infrastructure at the potential SFVAMC Mission Bay Campus from sea level rise by building or contributing funding for flooding impedance infrastructure and by renovating its buildings and infrastructure so that they would remain resilient and adaptable over time is also a strategy. This may lead to future planning efforts that could include construction of infrastructure to impede sea level rise or elevation of the topography in the Mission Bay area in a manner that prevents sea level rise from inundating the low-lying parts of the Mission Bay are. However, such efforts are speculative at this time, and these short term options do not account for local roadways and other infrastructure connecting any potential VA development in the Mission Bay to the rest of San Francisco and the SFPUC and PG&E systems. As sea level rise is projected to continue for centuries (likely beyond the end of the century) the only viable long-term option will likely be managed retreat from the inundated areas and ceasing new land use development in such areas. As such, in regards to climate risk and associated sea level rise risk, the current

[8] Note that San Francisco's AT&T Ballpark, which is also located in the Mission Bay/SOMA area was constructed as able to float in order to adapt to both potential earthquakes and potential sea level rise.

SFVAMC location at Fort Miley is, thus, a more advantageous location compared to the low-lying potential Mission Bay location.

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Appendix H

Coastal Assessment Supporting Information

- Coastal Consistency Determination

COASTAL CONSISTENCY DETERMINATION
SAN FRANCISCO VA MEDICAL CENTER
LONG RANGE DEVELOPMENT PLAN

I. AUTHORITY

The U.S. Department of Veterans Affairs (VA) is submitting this Coastal Consistency Determination in compliance with Section 930.34 et seq. of the National Oceanic and Atmospheric Administration Federal Consistency Regulations (Title 15 Code of Federal Regulations Part 930).

II. DETERMINATION

In accordance with the federal Coastal Zone Management Act (CZMA) of 1972, as amended, VA has determined that the Long Range Development Plan (LRDP) for the San Francisco VA Medical Center (SFVAMC) is consistent to the maximum extent practicable with the CZMA of 1972, as amended, and with the California Coastal Act (CCA) of 1976, as amended.

III. PROJECT DESCRIPTION

The Proposed Action is a LRDP that supports the mission of the San Francisco Veterans Affairs Medical Center (SFVAMC) to provide for the health care needs of Bay Area and North Coast Veterans by providing for the renovation, expansion, and operation of SFVAMC Fort Miley Campus. The LRDP includes development of new and retrofitting of existing buildings and structures that house patient care, research, administrative, and hoptel[1] functions, as well as parking. The SFVAMC has identified a need for retrofitting existing buildings at the Fort Miley Campus to meet the most recent seismic safety requirements and for an additional 589,000 gross square feet (gsf) of medical facility space to satisfy the needs of all San Francisco Bay Area and North Coast Veterans through approximately 2030 (see Figure 1). The LRDP is divided into planned short and long-term phases that would implement various facility components through 2027.

All new development would be designed to achieve Leadership in Energy and Environmental Design (LEED®) Silver certification and would implement the VA Strategic Sustainability Performance Plan (VA SSPP), which identifies VA's sustainability goals and defines VA's policy and strategy for achieving these goals. In addition to new development and associated demolition, buildings would be retrofitted according to VA seismic design requirements (VA Directive H-18-8), in compliance with Executive Order 12941.

An Environmental Impact Statement (EIS) was prepared to evaluate the potential environmental effects associated with implementing the LRDP for the SFVAMC at Fort Miley in San Francisco, California. Four alternatives were evaluated in the EIS process:

- **Alternative 1: SFVAMC Fort Miley Campus Buildout Alternative (Preferred Alternative)**— Alternative 1 is based on the LRDP, which proposes a reduced variation of the layout originally proposed in the October 2010 Draft IMP. Rather than the Draft IMP's proposed 924,200 additional gsf at the SFVAMC Fort Miley Campus, Alternative 1 proposes 322,200 net new gsf of facilities space and 232,252 new gsf of parking.

[1] A hoptel is an overnight, shared lodging facility for eligible Veterans receiving healthcare services. This temporary lodging is available to Veterans who need to travel 50 or more miles from their homes to the SFVAMC Fort Miley Campus.

Source: Data provided by the SFVAMC Engineering Department in 2010

Figure 1: Location of SFVAMC Fort Miley Campus within the Urban Context of San Francisco

garage space, for a total of 554,452 gsf of additional space. This alternative also proposes seismic upgrades to various existing structures on the Campus. Construction would occur in one short-term phase (Phase 1) and one long-term phase (Phase 2). This alternative allows VA to achieve 94% of its determined need of 589,000 net new gsf to serve Veterans through roughly 2030 at a single campus. VA understands this is 6% short of the determined space need.

- **Alternative 2: SFVAMC Fort Miley Campus Buildout Alternative 2**—Alternative 2 is also based on the LRDP, which proposes a reduced variation of the layout originally proposed in the October 2010 Draft IMP. Rather than the Draft IMP's proposed 924,200 additional gsf at the SFVAMC Fort Miley Campus, Alternative 2 proposes 322,200 net new gsf of facilities space and 232,252 new gsf of parking garage space, for a total of 554,452 gsf of additional space. This alternative also proposes seismic upgrades to various existing structures on the Campus. Construction would occur in one short-term phase (Phase 1) and one long-term phase (Phase 2). However a different, longer construction schedule would occur in the form of different phasing and implementation schedules for individual projects compared to Alternative 1. However, the total amount and type of operational space would be the same as that under Alternative 1. This alternative allows VA to achieve 94% of its determined need of 589,000 net new gsf to serve Veterans through roughly 2030 at a single campus. VA understands this is 6% short of the determined space need..

- **Alternative 3: SFVAMC Fort Miley Campus Plus Mission Bay Campus Alternative** —Alternative 3 would include all of the short-term (Phase 1) project components of Alternative 1. However, the long-term (Phase 2) project component would be located off-site. The particular site is unknown at this time; it would be determined and purchased by VA at a later date, and presumably would be located in the Mission Bay area of San Francisco. This alternative would entail adding a total of approximately 170,000 gsf in net new space at a Mission Bay location. This alternative allows VA to achieve 94% of its determined need of 589,000 net new gsf to serve Veterans through roughly 2030 at two campuses. VA understands this is 6% short of the determined space need.

- **Alternative 4: No Action Alternative**—Under the No Action Alternative (Alternative 4), the LRDP would not be implemented. This alternative would be 100% short of the determined space need. The purpose of analyzing the No Action Alternative is to allow decision-makers to compare the impacts of the action alternatives against the impacts of no action in the future. Although this alternative does not meet the purpose and need, it is included to allow decision-makers to compare the impacts of the action alternatives against the impacts of no action in the future.

Under both Alternatives 1 and 2, Phase 1 (short-term) project components would involve new development and/or retrofitting of patient care, research, administrative, hoptel, and parking structures on the existing 29-acre SFVAMC Fort Miley Campus through approximately 2020. The Phase 1 development footprint would take up approximately 0.69 acres within the previously developed areas of the existing 29-acre Campus. Short-term project components are summarized in Tables 1 and 2 and are shown in Figures 2 and 3.

Phase 2 (long-term) project components would be different for Alternatives 1 and 2. For Alternative 1, Phase 2 project components primarily would involve new development of Building 213, a clinical addition building, on the 29-acre SFVAMC Fort Miley Campus through 2027 (see Table 3 and Figure 4). The Alternative 1, Phase 2 development footprint would not take up any new acreage within the previously developed areas of the existing 29-acre Campus, as it would be constructed on the site of Building 12 (which would be demolished as part of

Alternative 1 Phase 1). Implementation of the Alternative 1, Phase 2 project components would involve one subphase of development and retrofitting over approximately 2 years, with completion anticipated by April 2026.

For Alternative 2, Phase 2 project components primarily would involve new development and retrofitting of patient care, research, administrative, and ambulatory care structures on the 29-acre SFVAMC Fort Miley Campus through 2023 (see Table 4 and Figure 5). Like Alternative 1 (Phase 2), the Alternative 2 Phase 2 development footprint would not take up any new acreage within the previously developed areas of the existing 29-acre Campus, as the proposed Building 213 would be constructed on the site of existing Building 12 (which would be demolished as part of Alternative 2 Phase 1) and seismic retrofits to existing Buildings 1, 6, and 8 would not result in new developed acreage. Under Alternative 2, implementation of the long-term (Phase 2) project components of Alternative 1 would involve four subphases of development and retrofitting over approximately 5.5 years, with completion anticipated by approximately March 2026.

Table 1: Alternative 1 Short-Term (Phase 1) Area, Massing, and Construction Schedule at the SFVAMC Fort Miley Campus (2013 through 2020)[1,2]

Phase	Proposed Action	Gross Square Feet	Net New Gross Square Feet	Number of Stories	Construction Duration[3]	Approximate Completion Date[4]
Phase 1						
1.1	Bldg 211—Emergency Operations Center and Parking Garage (377 spaces)[5]	155,000 (of which 2,000 is EOC and 3,000 is storage space)	155,000	4	12 months	July 2014
1.2	Bldg 41—Research (requires removal of Trailer 17)	14,200 (of which 4,600 is mechanical penthouse)	12,500	2	15 months	May 2015
1.3	Seismic Retrofit of Bldgs 5 and 7	27,393	0	2 and 3	14 months	May 2015
1.4	Bldg 22 Hoptel and Seismic Retrofit of Bldgs 9 and 10	18,200	8,700	2, 2, and 2	13 months	May 2015
1.5	Bldgs 209 and 211 Parking Garage Extensions (250 spaces)	82,252	82,252	5 and 4	12 months	March 2016
1.6	Bldg 203 C-Wing Extension (Ground-Floor Patient Welcome Center) and Drop-off Area with Canopy Structure	7,100	7,100	1	13 months	August 2016
1.7	Bldg 200 Expansion (Operating Room D-Wing)	5,300	5,300	1	12 months	June 2016
1.8	Bldg 24 Mental Health Clinic Expansion (requires demolition of Bldg 20)	15,600	13,300	3	14 months	October 2016
1.9	Bldg 40—Research (requires demolition of Bldgs 14, 18, and 21; removal of Trailer 23; and relocation of water tower)	110,000	91,300	4 (+ basement and mechanical	39 months	December 2018

Table 1: Alternative 1 Short-Term (Phase 1) Area, Massing, and Construction Schedule at the SFVAMC Fort Miley Campus (2013 through 2020)[1,2]

Phase	Proposed Action	Gross Square Feet	Net New Gross Square Feet	Number of Stories	Construction Duration[3]	Approximate Completion Date[4]
				penthouse)		
1.10	Bldg 207 Expansion (IT Support Space)	7,000	7,000	2	14 months	January 2017
1.11	Bldg 43—Research/ Administration (requires removal of Trailer 31)	15,000	13,500	2	15 months	February 2017
1.12	Trailer 36 (New Modular)	2,200	2,200	1	3 months	September 2016
1.13	Bldg 23—Mental Health Research Expansion	15,000	15,000	3 (+ basement)	14 months	December 2017
1.14	Bldg 203 Extension—Psychiatric Intensive Care Unit	1,200	1,200	1	18 months	June 2018
1.15	Bldg 208 Extension—Community Living Center and National Cardiac Device Surveillance Center (requires removal of Trailer 24)	10,000	9,000	3	18 months	August 2018
1.16	Seismic Retrofit of Bldgs 1, 6, and 8	115,547	0	5, 4, and 3	20 months	March 2019
1.17	Demolition of Bldg 12	0	-38,900	N/A	11 months	August 2020
	Total Phase 1 Area	**600,992**	**384,452**	**Total Phase 1 Duration**		**85 months**

Notes:
Bldg = Building; EOC = Emergency Operations Center; IT = information technology; N/A = not applicable
1 This table reflects approximate construction schedules and completion dates.
2 In addition, a total of 321 parking spaces would be eliminated from a combination of surface parking lots D, E, H, J, K, and L.
3 Construction includes all demolition, grading, structure development, and painting activities associated with the Proposed Action.
4 Dates shown represent approximate time frames; funding has yet to be secured for some project components. Furthermore, because of space restrictions, the ability of the U.S. Department of Veterans Affairs to construct multiple phase components simultaneously is limited.
5 The Emergency Operations Center and Building 211 Parking Garage square footage in this table reflects both the habitable (center and storage area) and the nonhabitable (parking garage) space planned for construction. Although the San Francisco Veterans Affairs Medical Center Long Range Development Plan discusses habitable square footage, this Environmental Impact Statement must evaluate the impacts associated with construction of the entire square footage, including nonhabitable space.
Source: VA, 2014

Table 2-1: Alternative 1 Short-Term (Phase 1) Area, Massing, and Construction Schedule at the SFVAMC Fort Miley Campus (2013 through 2020)[1,2]

Phase	Proposed Action	Gross Square Feet	Net New Gross Square Feet	Number of Stories	Construction Duration[3]	Approximate Completion Date[4]
Phase 1						
1.1	Bldg 211—Emergency Operations Center and Parking Garage (377 spaces)[5]	155,000 (of which 2,000 is EOC and	155,000	4	12 months	July 2014

Table 1: Alternative 1 Short-Term (Phase 1) Area, Massing, and Construction Schedule at the SFVAMC Fort Miley Campus (2013 through 2020)[1,2]

Phase	Proposed Action	Gross Square Feet	Net New Gross Square Feet	Number of Stories	Construction Duration[3]	Approximate Completion Date[4]
		3,000 is storage space)				
1.2	Bldg 41—Research (requires removal of Trailer 17)	14,200 (of which 4,600 is mechanical penthouse)	12,500	2	15 months	May 2015
1.3	Seismic Retrofit of Bldgs 5 and 7	27,393	0	2 and 3	14 months	May 2015
1.4	Bldg 22 Hoptel and Seismic Retrofit of Bldgs 9 and 10	18,200	8,700	2, 2, and 2	13 months	May 2015
1.5	Bldgs 209 and 211 Parking Garage Extensions (250 spaces)	82,252	82,252	5 and 4	12 months	March 2016
1.6	Bldg 203 C-Wing Extension (Ground-Floor Patient Welcome Center) and Drop-off Area with Canopy Structure	7,100	7,100	1	13 months	August 2016
1.7	Bldg 200 Expansion (Operating Room D-Wing)	5,300	5,300	1	12 months	June 2016
1.8	Bldg 24 Mental Health Clinic Expansion (requires demolition of Bldg 20)	15,600	13,300	3	14 months	October 2016
1.9	Bldg 40—Research (requires demolition of Bldgs 14, 18, and 21; removal of Trailer 23; and relocation of water tower)	110,000	91,300	4 (+ basement and mechanical penthouse)	39 months	December 2018
1.10	Bldg 207 Expansion (IT Support Space)	7,000	7,000	2	14 months	January 2017
1.11	Bldg 43—Research/ Administration (requires removal of Trailer 31)	15,000	13,500	2	15 months	February 2017
1.12	Trailer 36 (New Modular)	2,200	2,200	1	3 months	September 2016
1.13	Bldg 23—Mental Health Research Expansion	15,000	15,000	3 (+ basement)	14 months	December 2017
1.14	Bldg 203 Extension—Psychiatric Intensive Care Unit	1,200	1,200	1	18 months	June 2018
1.15	Bldg 208 Extension—Community Living Center and National Cardiac Device Surveillance Center (requires removal of Trailer 24)	10,000	9,000	3	18 months	August 2018
1.16	Seismic Retrofit of Bldgs 1, 6, and 8	115,547	0	5, 4, and 3	20 months	March 2019

Table 1: Alternative 1 Short-Term (Phase 1) Area, Massing, and Construction Schedule at the SFVAMC Fort Miley Campus (2013 through 2020)[1,2]

Phase	Proposed Action	Gross Square Feet	Net New Gross Square Feet	Number of Stories	Construction Duration[3]	Approximate Completion Date[4]
1.17	Demolition of Bldg 12	0	-38,900	N/A	11 months	August 2020
	Total Phase 1 Area	**600,992**	**384,452**	**Total Phase 1 Duration**		**85 months**

Notes:
Bldg = Building; EOC = Emergency Operations Center; IT = information technology; N/A = not applicable
1 This table reflects approximate construction schedules and completion dates.
2 In addition, a total of 321 parking spaces would be eliminated from a combination of surface parking lots D, E, H, J, K, and L.
3 Construction includes all demolition, grading, structure development, and painting activities associated with the Proposed Action.
4 Dates shown represent approximate time frames; funding has yet to be secured for some project components. Furthermore, because of space restrictions, the ability of the U.S. Department of Veterans Affairs to construct multiple phase components simultaneously is limited.
5 The Emergency Operations Center and Building 211 Parking Garage square footage in this table reflects both the habitable (center and storage area) and the nonhabitable (parking garage) space planned for construction. Although the San Francisco Veterans Affairs Medical Center Long Range Development Plan discusses habitable square footage, this Environmental Impact Statement must evaluate the impacts associated with construction of the entire square footage, including nonhabitable space.
Source: VA, 2014

Table 2: Alternative 2 Short-Term (Phase 1) Area, Massing, and Construction Schedule at the SFVAMC Fort Miley Campus (2013 through 2020)1,2

Proposed Action	Gross Square Feet	Net New Gross Square Feet	Number of Stories	Construction Duration[3]	Approximate Completion Date[4]
Phase 1					
Bldg 211—Emergency Operations Center and Parking Garage (377 spaces)[5]	155,000 (of which 2,000 is EOC and 3,000 is storage space)	155,000	4	12 months	July 2014
Bldg 41—Research (requires removal of Trailer 17)	14,200 (of which 4,600 is mechanical penthouse)	12,500	2	15 months	March 2015
Seismic Retrofit of Bldgs 5 and 7	27,393	0	2 and 3	14 months	May 2015
Bldg 22 Hoptel and Seismic Retrofit of Bldgs 9 and 10	18,200	8,700	2, 2, and 2	13 months	May 2015
Bldgs 209 and 211 Parking Garage Extensions (250 spaces)	82,252	82,252	5 and 4	12 months	March 2016
Bldg 203 C-Wing Extension (Ground-Floor Patient Welcome Center) and Drop-off Area with Canopy Structure	7,100	7,100	1	13 months	August 2016
Bldg 200 Expansion (Operating	5,300	5,300	1	12 months	June 2016

Room D-Wing)					
Bldg 24 Mental Health Clinic Expansion (requires demolition of Bldg 20)	15,600	13,300	3	14 months	October 2016
Bldg 40—Research (requires demolition of Bldgs 14, 18, and 21; removal of Trailer 23; and relocation of water tower)	110,000	91,300	4 (+ basement and mechanical penthouse)	39 months	September 2018
Bldg 207 Expansion (IT Support Space)	7,000	7,000	2	14 months	January 2017
Bldg 43—Research/ Administration (requires removal of Trailer 31)	15,000	13,500	2	15 months	February 2017
Trailer 36 (New Modular)	2,200	2,200	1	3 months	September 2016
Bldg 23—Mental Health Research Expansion	15,000	15,000	3 (+ basement)	14 months	December 2017
Bldg 203 Extension—Psychiatric Intensive Care Unit	1,200	1,200	1	18 months	June 2018
Bldg 208 Extension—Community Living Center and National Cardiac Device Surveillance Center (requires removal of Trailer 24)	10,000	9,000	3	18 months	August 2017
Demolition of Bldg 12	0	-38,900	N/A	11 months	August 2019
Total Phase 1 Area	**485,445**	**384,452**	**Total Phase 1 Duration**		**73 months**

Bldg = Building; EOC = Emergency Operations Center; IT = information technology; N/A = not applicable

Notes:

1 This table reflects approximate construction schedules and completion dates.

2 In addition, a total of 321 parking spaces would be eliminated from a combination of surface parking lots D, E, H, J, K, and L.

3 Construction includes all demolition, grading, structure development, and painting activities associated with the Proposed Action.

4 Dates shown represent approximate time frames; funding has yet to be secured for some project components. Furthermore, because of space restrictions, the ability of VA to construct multiple phase components simultaneously is limited.

5 The Emergency Operations Center and Building 211 Parking Garage square footage in this table reflects both the habitable (center and storage area) and the nonhabitable (parking garage) space planned for construction. Although the San Francisco Veterans Affairs Medical Center Long Range Development Plan discusses habitable square footage, this Environmental Impact Statement must evaluate the impacts associated with construction of the entire square footage, including nonhabitable space.

Source: VA, 2014

Source: VA, 2014
Note: The 17 subphases of Phase 1 components identified in Table 1 are indicated in this figure.

Figure 2: Alternatives 1 and 3 (Phase 1) Footprint and Concept Plan through 2020—SFVAMC Fort Miley Campus

Source: VA, 2014
Note: The 16 subphases of Phase 1 components identified in Table 2 are indicated in this figure.

Figure 3: Alternative 2 (Phase 1) Footprint and Concept Plan through 2020—SFVAMC Fort Miley Campus

Table 3: Alternative 1 Long-Term (Phase 2) Area, Massing, and Construction Schedule at the SFVAMC Fort Miley Campus (2020 through 2027)[1]

Phase	Proposed Action	Gross Square Feet	Net New Gross Square Feet	Number of Stories	Construction Duration[2]	Approximate Completion Date[3]
Phase 2						
2.1	Bldg 213 (Clinical Addition Building)	170,000	170,000	5 (+ basement)	24 months	March 2026
	Total Phase 2 Area	**170,000**	**170,000**	**Total Phase 2 Duration**		**24 months**

Bldg = Building
Notes:
1 This table reflects approximate construction schedules and completion dates.
2 Construction includes all demolition, grading, structure development, and painting activities associated with the Proposed Action.
3 Dates shown represent approximate time frames; funding has yet to be secured for some project components. Furthermore, because of space restrictions, the ability of VA to construct multiple phase components simultaneously is limited.
Source: VA, 2014

Source: VA, 2014
Note: The one Phase 2 subphase component identified in Table 3 is indicated in this figure.

Figure 4 **Alternative 1 Long-Term (Phase 2) Footprint and Concept Plan through 2027—SFVAMC Fort Miley Campus**

Table 4: Alternative 2 Long-Term (Phase 2) Area, Massing, and Construction Schedule at the SFVAMC Fort Miley Campus (2020 through 2027)[1]

Phase	Proposed Action	Gross Square Feet	Net New Gross Square Feet	Number of Stories	Construction Duration[2]	Approximate Completion Date[3]
Phase 2						
2.1	Bldg 8 (Seismic Retrofit)	25,521	0	3	14 months	December 2021
2.2	Bldg 1 (Seismic Retrofit)	37,765	0	5	20 months	June 2022
2.3	Bldg 6 (Seismic Retrofit)	52,261	0	4	20 months	February 2024
2.4	Bldg 213 (Clinical Addition Building)	170,000	170,000	5 (+ basement)	24 months	March 2026
	Total Phase 2 Area	**285,487**	**170,000**	**Total Phase 2 Duration**		**65 months**

Bldg = Building

Notes:

1 This table reflects approximate construction schedules and completion dates.

2 Construction includes all demolition, grading, structure development, and painting activities associated with the Proposed Action.

3 Dates shown represent approximate time frames; funding has yet to be secured for some project components. Furthermore, because of space restrictions, the ability of the U.S. Department of Veterans Affairs to construct multiple phase components simultaneously is limited.

Source: VA, 2014

Source: VA, 2014

Note: The four subphases of Phase 2 components identified in Table 4 are indicated in this figure.

Figure 5: Alternative 2 Long-Term (Phase 2) Footprint and Concept Plan through 2027—SFVAMC Fort Miley Campus

For Alternative 3, Phase 2 project components would involve primarily development of ambulatory care, research, and parking structures at a potential new SFVAMC Mission Bay Campus. Since only project components located at the SFVAMC Fort Miley Campus are subject to consistency determination by the California Coastal Commission (Commission), Alternative 3 Phase 2 project components would not be applicable and are not discussed further.

Landscaping and Open Space

An objective of the LRDP is to coordinate the location and massing of the buildings so that continued development of the Campus improves connections to surrounding parks and other parts of the City of San Francisco. The public urban spaces that would be created are intended to transform the Campus into an integral urban area that fits with the City. Various open space areas of the existing SFVAMC Fort Miley Campus would be developed with the proposed buildings including the Mental Health Clinic Expansion and the Hoptel Addition. In addition, a new landscape area would be developed within the drop- off circle that is proposed as part of the Patient Welcome Center and Drop-off Area, including a healing garden. Sidewalks and walkways for pedestrians would be modified to improve connectivity and flow between facilities. Six landscape zones are envisioned in the LRDP for the Campus:

1. the gateway landscape zone that would serve as the entry to the SFVAMC Fort Miley Campus, marking the transition from the adjacent city grid to the Campus setting,

2. the buffer zone which would be designed to serve as appropriate buffer and transition areas at the edges of the Campus,

3. the coastal landscape/overlook trail area at the northern edge of the Campus which would include walking trails, as well as a location for formal events and informal gatherings and reflection,

4. the healing garden zone, which would be designed as areas of quiet relaxation and contemplation, incorporating the area’s natural setting and views,

5. the garden landscape areas would be integrated throughout the Campus, with formal landscaped areas that provide a pleasant and comfortable pedestrian environment surrounding buildings and near parking areas,

6. the pedestrian pathways and connections would be incorporated throughout the Campus, with the intent of enhancing the pedestrian environment and encouraging mobility, creating connections to landscaped areas and destinations.

IV. PROJECT AREAS AND ACTIVITIES SUBJECT TO CONSISTENCY DETERMINATION

The existing SFVAMC Fort Miley Campus is located at 4150 Clement Street in the northwestern portion of San Francisco, adjacent to the outer Richmond neighborhood, approximately 2 miles west of State Route (SR) 1 (also known as Park Presidio Bypass Drive in this area) (see Figure 1). The Campus is bordered by Clement Street and private residential uses to the south, and National Park Service lands to the north, east, and west (see Figure 6). The Campus is situated approximately 6 miles west of downtown San Francisco and encompasses approximately 29 acres.

Source: VA, 2014

Figure 6: **Existing SFVAMC Fort Miley Campus Layout**

The SFVAMC Fort Miley Campus is located on federal lands that are owned by VA. The existing SFVAMC Fort Miley Campus facilities occupy approximately 1 million square feet and include a 124-bed tertiary-care hospital, primary- and specialty-care services, and a 120-bed community living center. SFVAMC has identified a deficiency of 589,000 square feet of building space. As shown in Figure 6, the Campus contains 36 buildings totaling approximately 987,000 square feet of habitable development, including:

- An inpatient hospital building
- An outpatient clinical building
- Research buildings
- Two hoptel buildings
- A community living center
- Administrative/office buildings
- Various storage, infrastructure, and other facilities

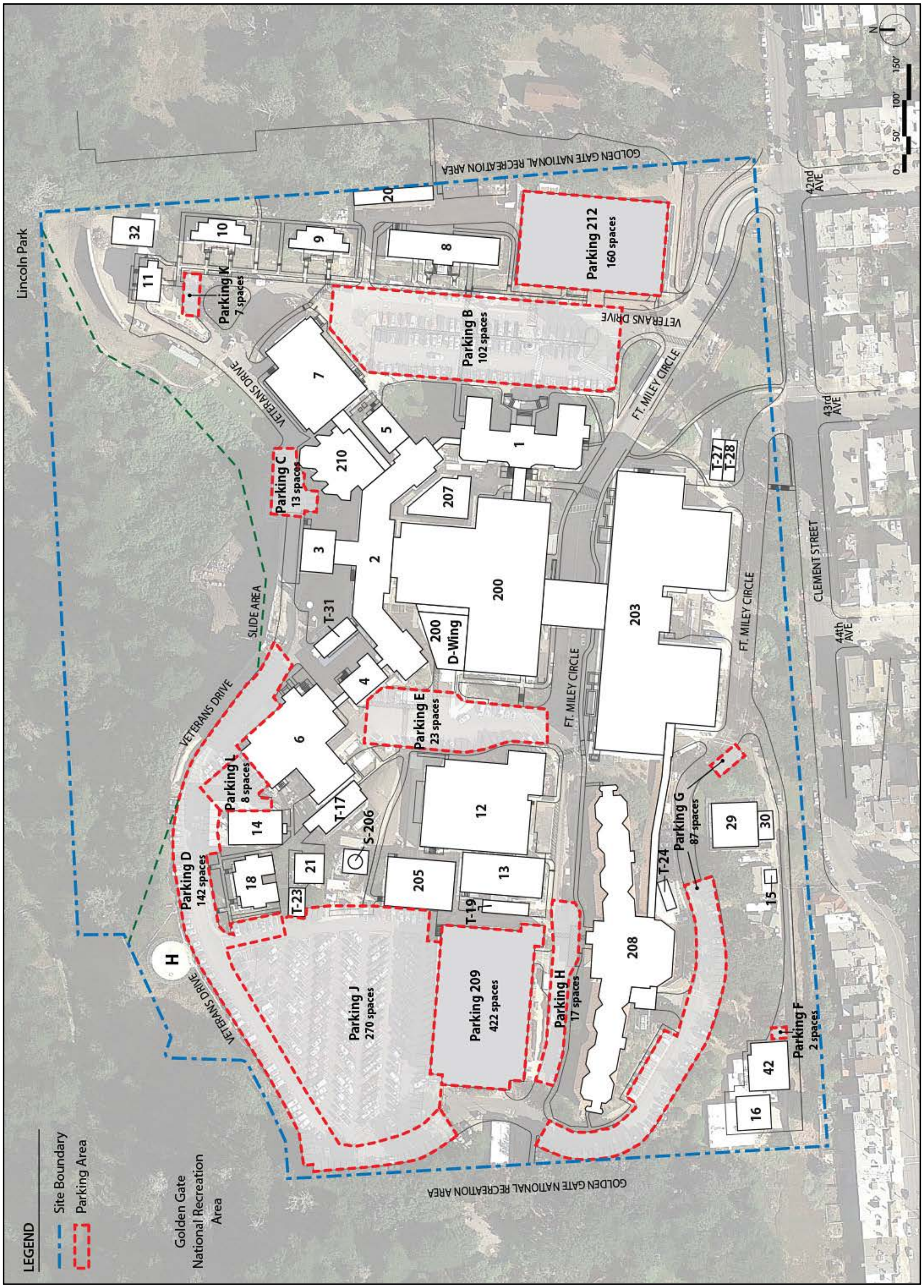
In addition, 10 surface parking lot areas and two parking structures provide 1,253 parking spaces (see Figure 7). A helipad is located at the northwestern corner of the Campus.

The majority of the SFVAMC, primarily the west side (approximately 24.4 acres, or 84 percent) of the Campus is located within the California Coastal Zone boundary (see Figure 8). As defined in Section 304 of the federal CZMA of 1972, the term “coastal zone” does not include “lands the use of which is by law subject solely to the discretion of or which is held in trust by the federal government.” The Campus is within federal jurisdiction and is wholly owned and operated by VA. Although the regulations of the Coastal Zone Management Act are not directly applicable to the existing SFVAMC Fort Miley Campus, VA recognizes that actions outside the coastal zone may affect land or water uses or natural resources along the coast and, therefore, are subject to the provisions of the CZMA.

The coastal zone established by the CCA does not include San Francisco Bay, which is defined as the area east of the Golden Gate Bridge. The San Francisco Bay Conservation and Development Commission (BCDC) is the federally designated State coastal management agency for San Francisco Bay. This designation empowers BCDC to use the authority of the federal CZMA, so that federal projects and activities are consistent with the policies of the San Francisco Bay Plan and State law. The coastal portions of the Mission Bay area are located within BCDC’s area of jurisdiction, which includes the first 100 feet shoreward from the line of highest tidal action (mean high-tide line) around San Francisco Bay. Therefore, only the proposed project activities at the existing SFVAMC Fort Miley Campus are subject to consistency determination under the CCA by the Commission.

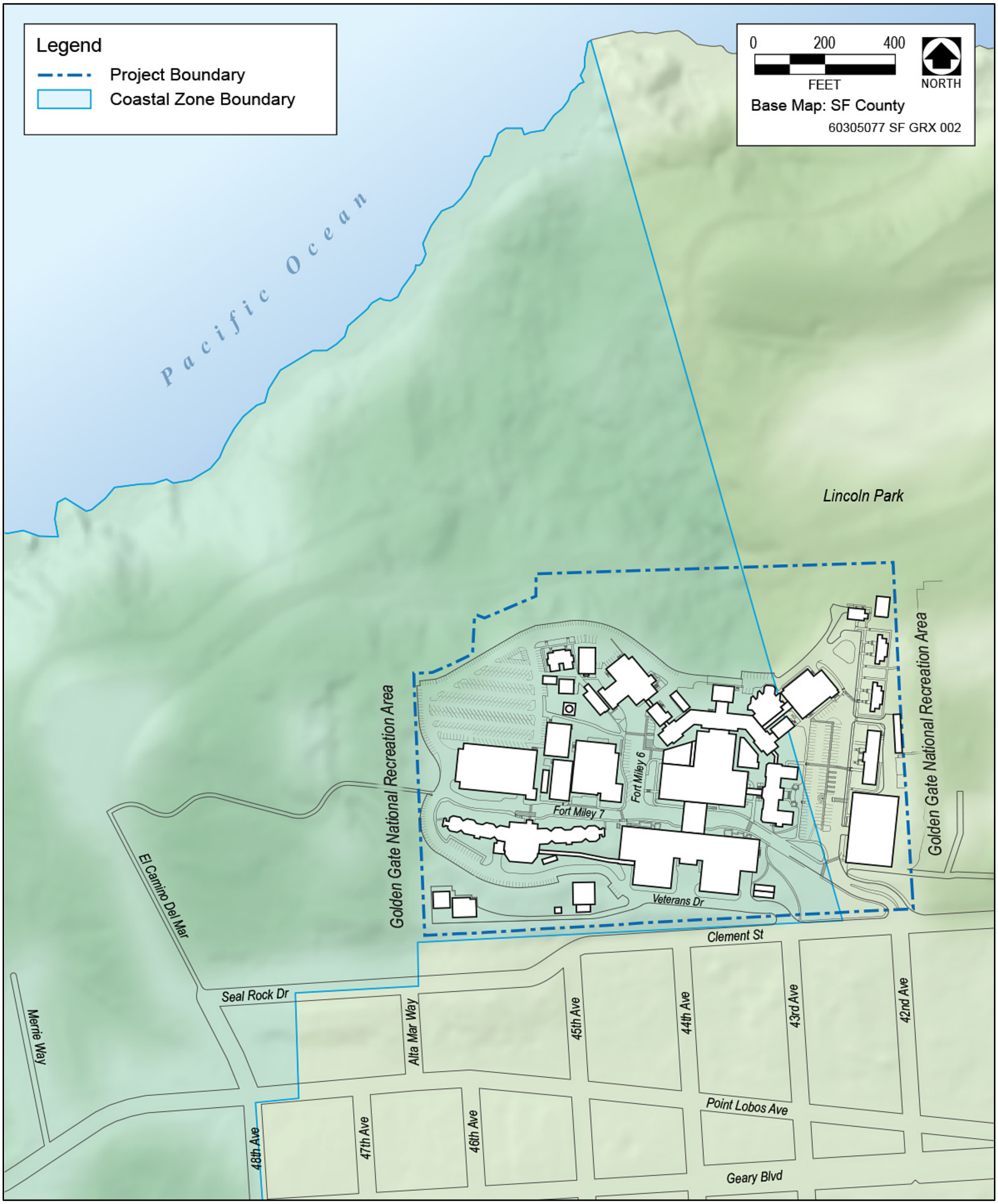
If Alternative 3 is chosen and the selected project site for Phase 2 is situated within 100 feet of San Francisco Bay, a consistency determination would be obtained from BCDC before commencement of construction and the construction contractor would attempt to avoid the BCDC jurisdictional line. If development were to be proposed along the water’s edge of San Francisco Bay, an application would be submitted to BCDC for approval if any of the following actions would need to occur:

- placing solid material, building or repairing docks or pile-supported or cantilevered structures, disposing of material, or mooring a vessel for a long period in San Francisco Bay or in certain tributaries that flow into the bay;



Source: VA, 2012

Figure 7: Parking Facilities—Existing SFVAMC Fort Miley Campus



Source: Base layer from SF County; coastal zone boundary layer from California Department of Transportation TSI/GIS Data Branch, 2009; data compiled by AECOM in 2014

Figure 8: Coastal Zone Boundary

- dredging or extracting material from the bay bottom;
- substantially changing the use of any structure or area;
- constructing, remodeling, or repairing a structure; or
- subdividing property or grading land.

Prior Commission Action on VA Proposals at the SFVAMC Fort Miley Campus

One previous VA action at the SFVAMC has been subject to federal consistency review. On March 12, 2007, the Commission issued Negative Determination (ND) ND-095-06 for the SFVAMC Building 203 Seismic Retrofit Project.

V. CONSISTENCY OF THE LRDP WITH PROVISIONS OF THE CALIFORNIA COASTAL ACT

Since CZMA Section 307 provides the legal authority for the Commission to review federal agency activities along the Pacific Coast in California for consistency with the California Coastal Management Program, this portion of the federal consistency determination analyzes consistency between policy sections of the CCA (Divisions 20, California Public Resources Code) and the proposed LRDP project components on federal lands included within the SFVAMC Fort Miley Campus.

Policies under the CCA that are <u>not applicable</u> to the LRDP include:

- Article 2, Public Access
    - Section 30212 - New development projects
    - Section 30213 - Lower cost visitor and recreational facilities; encouragement and provision; overnight room rentals
- Article 3, Recreation
    - Section 30220 - Protection of certain water-oriented activities
    - Section 30221 - Oceanfront land; protection for recreational use and development
    - Section 30222 - Private lands; priority of development purposes
    - Section 30222.5 - Oceanfront lands; aquaculture facilities; priority
    - Section 30224 - Recreational boating use; encouragement; facilities
- Article 4, Marine Environment
    - Section 30230 - Marine resources; maintenance
    - Section 30233 - Diking, filling or dredging; continued movement of sediment and nutrients
    - Section 30234 - Commercial fishing and recreational boating facilities
    - Section 30234.5 - Economic, commercial, and recreational importance of fishing
    - Section 30235 - Construction altering natural shoreline
    - Section 30236 - Water supply and flood control
- Article 5, Land Resources

  - Section 30241 - Prime agricultural land; maintenance in agricultural production
  - Section 30241.5 - Agricultural land; determination of viability of uses; economic feasibility evaluation
  - Section 30242 - Lands suitable for agricultural use; conversion
  - Section 30243 - Productivity of soils and timberlands; conversions
- All sections of Article 7, Industrial Development

Policies under the CCA that are applicable to the LRDP include:

Article 2, Public Access

Section 30210: Access; recreational opportunities; posting. In carrying out the requirement of Section 4 of Article X of the California Constitution, maximum access, which shall be conspicuously posted, and recreational opportunities shall be provided for all the people consistent with public safety needs and the need to protect public rights, rights of private property owners, and natural resource areas from overuse. (Amended by Ch. 1075, Stats. 1978.)

Section 30211: Development not to interfere with access. Development shall not interfere with the public's right of access to the sea where acquired through use or legislative authorization, including, but not limited to, the use of dry sand and rocky coastal beaches to the first line of terrestrial vegetation.

Analysis and Comment: The existing SFVAMC Fort Miley Campus is bounded on three sides by a contiguous system of parklands consisting of Lands End, Fort Miley, and Lincoln Park. Implementation of the project components would not inhibit access to or use of adjacent Golden Gate National Recreation Area (GGNRA) recreational areas. Access to East Fort Miley and West Fort Miley is available from the Campus near the main entrance by way of a paved roadway. During construction, this road could be temporarily closed, although this access road is not the primary entry point into adjacent Fort Miley, some hospital-related staff and recreationists likely use these roadway occasionally to access the parklands. To the extent practicable, the access road would be kept open during construction, however, if a temporary closure of the roadway is necessary, notification of the closure would be posted a minimum of 2 weeks in advance. There are multiple locations to access the Lands End–Fort Miley–Lincoln Park system and the primary access points into the parklands system would remain open and would not be affected, therefore temporary closure of the Campus access road is not expected to inhibit access to and use of these parks.

Section 30212.5: Public facilities; distribution. Wherever appropriate and feasible, public facilities, including parking areas or facilities, shall be distributed throughout an area so as to mitigate against the impacts, social and otherwise, of overcrowding or overuse by the public of any single area.

Analysis and Comment: Parking structures within the SFVAMC Fort Miley Campus serve the personnel, patients and visitors and are not intended for coastal access parking (see Figure 8). On-street parking in the vicinity of the existing SFVAMC Fort Miley Campus generally consists of unmetered parallel parking. Existing on-street parking conditions were qualitatively assessed by field observations conducted during the weekday peak periods. Based on the field observations, it was determined that on-street parking is well utilized throughout the day, although particular occupancy percentages can vary depending on location and peak period.

Alternative 1, Alternative 2, and Alternative 3 (Phase 1) would result in a net new parking demand of an estimated 132 spaces during the weekday peak period. As part of Phase 1, 321 existing parking spaces would be eliminated and replaced by 377 new parking spaces as part of the proposed Emergency Operations Center and Building 211 Parking Garage. In addition, 250 new parking spaces would be added as part of the extensions of Buildings 209 and 211, for a net addition of 306 spaces by the year 2020 which would exceed the estimated new demand by 174 spaces. Alternative 1 and Alternative 2 (Phase 1 and Phase 2) would generate a demand for 426 parking spaces under 2027 conditions. Parking generally is not considered part of the permanent physical environment, with supply and demand highly variable and dependent on many different factors. The absence of a ready supply of parking spaces, combined with available alternatives to auto travel (e.g., transit services, taxis, bicycles, or travel by foot) and a relatively dense pattern of urban development, induces many drivers to seek and find alternative parking facilities, shift to other modes of travel, or change their overall travel habits. Shifts to transit service are consistent with the City of San Francisco's "Transit First" policy.

Some SFVAMC Fort Miley Campus parking spaces would be temporarily unavailable to accommodate space for temporary modular structures that would be put in place for employees to work in while some buildings are being seismically retrofitted. However, VA parking would not overflow into public parking areas that would affect the public's ability to gain coastal access. During construction periods, VA would provide additional valet parking services on the SFVAMC Fort Miley Campus to address temporary parking reductions. In addition, VA parking (primarily weekday operations) would not overlap with weekend public parking for access to coastal public areas.

Veterans and hospital personnel would benefit from additional park spaces, improved circulation and connections to the surrounding federal park system.

Section 30214: Implementation of public access policies; legislative intent. (a) The public access policies of this article shall be implemented in a manner that takes into account the need to regulate the time, place, and manner of public access depending on the facts and circumstances in each case including, but not limited to, the following:

(1) Topographic and geologic site characteristics.

(2) The capacity of the site to sustain use and at what level of intensity.

(3) The appropriateness of limiting public access to the right to pass and repass depending on such factors as the fragility of the natural resources in the area and the proximity of the access area to adjacent residential uses.

(4) The need to provide for the management of access areas so as to protect the privacy of adjacent property owners and to protect the aesthetic values of the area by providing for the collection of litter.

Analysis and Comment: Public access to adjacent parklands is not regulated by VA, however connections are available adjacent to the Campus into the Lands End–Fort Miley–Lincoln Park system. There is not a security fence around SFVAMC, therefore, while the site is primarily for patients, visitors and personnel, the public can pass through the Campus. Access to East Fort Miley and West Fort Miley, located within the GGNRA, is available from the Campus near the main entrance through a roadway that may be closed during a portion of construction activities. Access to Fort Miley from the Campus may be used by hospital-related staff, patients, visitors and occasional recreationists. Temporary closure of the access road will not affect use of the parklands because the primary entry point into adjacent Fort Miley would still be available and there are multiple other locations in which to access the parklands.

During construction the contractor would manage nonhazardous building construction and demolition waste in accordance with VA Specifications Section 017419, which requires efficient waste management and removal and legal disposal of materials. During demolition and construction, hazardous waste would be disposed in a manner consistent with federal, State, and local regulations. During operation of SFVAMC the VA complies with all waste management policies.

Article 3, Recreation

Section 30223: Upland Areas. Upland areas necessary to support coastal recreational uses shall be reserved for such uses, where feasible.

Analysis and Comment: The existing SFVAMC Fort Miley Campus is bounded on three sides by a contiguous system of parklands consisting of Lands End, Fort Miley, and Lincoln Park. Immediately east and west of the Campus is Fort Miley, part of the GGNRA managed by the National Park Service (NPS). Under the LRDP, no taking of adjacent parklands would occur because all future modifications would be entirely within the existing footprint of the Campus. However, East Fort Miley and West Fort Miley are currently accessible from the Campus by way of a paved roadway from the Campus near the main entrance. Although this access road is not the primary entry points into adjacent Fort Miley, some hospital-related staff, patients, visitors and recreationists may occasionallyaccess the parklands from this road. To the extent practicable, the access roads would be kept open during construction, however, if a temporary closure is necessary, notification of the closure would be posted a minimum of 2 weeks in advance. There are several other locations to access the Lands End–Fort Miley–Lincoln Park system include the main access points, which would remain open during any temporary closure. Therefore, implementation of project components would not inhibit access to or use of the adjacent GGNRA recreational areas.

Article 4, Marine Environment

Section 30231: Biological productivity; water quality. The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface waterflow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.

Analysis and Comment: No creeks or open water bodies are located on or near the existing SFVAMC Fort Miley Campus. During construction, potentially adverse impacts could occur to bird species and bats using the area, related to vegetation removal. However, with the implementation of wildlife surveys and avoidance of the breeding season, impacts would be minor **[EIS Mitigation Measure WH-1]**. Removal of landscape species such as Monterey pine, Monterey cypress, and the understory during construction would not constitute an adverse impact to vegetation and habitats because these species are not native to the area. Because the footprint of operations at the SFVAMC Fort Miley Campus generally would remain the same, the condition of surrounding habitat is not anticipated to change or become degraded. No impacts to vegetation and habitat would occur from operation of the project.

The project would be required to comply with Article 4.1 of the San Francisco Public Works Code, which regulates the quantity and quality of discharges to the combined sewer system. A storm water pollution prevention plan (SWPPP) would be prepared to reduce project-related pollution of surface water throughout the construction period. Most stormwater runoff from the project site would be collected and treated at the Oceanside Water Pollution Control Plant before discharge to the Pacific Ocean, and therefore would meet the effluent discharge limitations set by the plant's National Pollutant Discharge Elimination System (NPDES) permit. For stormwater that discharges to the small, separate storm drainage system on the north side of the existing SFVAMC Fort Miley Campus along the north-facing slope, the project would be required to obtain coverage under the Construction General Permit (Order 2009-0009-DWQ, as amended by 2010-0014-DWQ and 2012-0006-DWQ), which requires the development and implementation of a SWPPP. Through preparation and implementation of SWPPPs, compliance with required permits, and implementation of VA Specification Section 015719, "Temporary Environmental Controls," construction-related water quality impacts to the Pacific Ocean would be minor.

All wastewater from the SFVAMC Fort Miley Campus would be treated at the Oceanside Water Pollution Control Plant before being discharged to the Pacific Ocean. Treatment would be provided to meet the effluent discharge limitations set by the plant's NPDES permit.

An increase in total or peak runoff volume from the site relative to existing conditions could contribute to the frequency or severity of combined sewer overflow (CSO) events discharged to the Pacific Ocean. Project implementation is anticipated to result in an increase in impervious sites (0.69 acre increase in impervious area, which is a 4 percent increase in impervious area at the 29-acre Campus), compared to existing conditions on the SFVAMC Fort Miley Campus. However, implementation of the project components would result in minimal alterations to runoff conditions because the projects would occur within the existing development footprint of the Campus, primarily on existing impervious sites (i.e., existing paved parking areas and buildings). Submittal and implementation of final drainage plans would ensure proper sizing of infrastructure to handle stormwater and wastewater flows, to protect from downgradient flooding hazards that could affect the coastal zone **[EIS Mitigation Measure HYD-1]**. In addition, the use of Low Impact Development (LID) techniques to infiltrate, evaporate, and detain stormwater would be required to comply with Section 438 of the federal Energy Independence and Security Act and Article 4.2 of the San Francisco Public Works Code, and this would ensure maintenance of predevelopment stormwater runoff conditions. No groundwater would be used as part of the project.

Section 30232: Oil and hazardous substance spills. Protection against the spillage of crude oil, gas, petroleum products, or hazardous substances shall be provided in relation to any development or transportation of such materials. Effective containment and cleanup facilities and procedures shall be provided for accidental spills that do occur.

Analysis and Comment: The project would be required to comply with Article 4.1 of the San Francisco Public Works Code, which regulates the quantity and quality of discharges to the combined sewer system. A SWPPP would be prepared to reduce project-related pollution of surface water throughout the construction period. Most stormwater runoff from the project site also would be collected and treated at the Oceanside Water

Pollution Control Plant before discharge to the Pacific Ocean, and therefore would meet the effluent discharge limitations set by the plant's NPDES permit. For stormwater discharged to the small, separate storm drainage system on the north side of the existing SFVAMC Fort Miley Campus along the north-facing slope, the project would be required to obtain coverage under the Construction General Permit (Order 2009-0009-DWQ, as amended by 2010-0014-DWQ and 2012-0006-DWQ), which requires the development and implementation of a SWPPP. Through preparation and implementation of SWPPPs, compliance with required permits, and implementation of VA Specification Section 015719, "Temporary Environmental Controls," construction-related water quality impacts to the Pacific Ocean would be minor.

Operation of the project would not substantially degrade water quality or contaminate the public water supply. All sanitary wastewater from the proposed buildings and most stormwater runoff from the SFVAMC Fort Miley Campus would flow into the City's combined sewer system, to be treated at the Oceanside Water Pollution Control Plant before discharge into the Pacific Ocean. Treatment would be provided pursuant to the effluent discharge limitations set by the plant's NPDES permit, and therefore would comply with all local wastewater discharge requirements. Stormwater runoff from the north slope of the Campus would flow to the small, separate storm drainage system and would be conveyed off-site through piping equipped with energy dissipaters. In addition, the stormwater runoff to the separate storm drain system that drains areas to the north of the Campus would be monitored by the SFVAMC, pursuant to requirements in the Industrial Class I Wastewater Permit issued by the San Francisco Public Utilities Commission (SFPUC) (Permit No. 10-06550).

The existing SFVAMC Fort Miley Campus and the surrounding area are occupied by structures of various uses that either are known to or presumably manage hazardous materials, medical chemicals, and petroleum products. Furthermore, the Campus is in an area of possible serpentinitic bedrock; therefore, naturally occurring asbestos may be present in the soil. The SFVAMC would be required to adhere to the regulations and standards for inspection, abatement, exposure, and disposal of any hazardous building materials encountered (e.g., lead, PCBs, mercury).

To minimize construction risks associated with hazardous materials exposure, all hazardous materials would be stored, used, transported, and disposed in strict accordance with all local, State, and federal hazardous waste regulations. Furthermore, the construction contractor would be required to submit an environmental protection plan, in accordance with VHA Environmental Protection Specifications Section 015719. This plan would describe the best management practices (BMPs) that would be implemented to minimize risks associated with the use, storage, handling, and transport of hazardous materials and the contingency protocols to be implemented in the event of an accidental release or exposure during construction. Compliance with the environmental protection plan would ensure that impacts associated with potential hazardous materials exposure would be minor.

Operation of the project would generate hazardous wastes similar to those currently permitted to be generated, stored, and/or released on the existing SFVAMC Fort Miley Campus by State and federal agencies. Because the project would expand the Campus, an increase in the generation of hazardous wastes may result. However, the VA SSPP includes the implementation of environmental management action plans. These action plans would provide guidance on reducing the use and disposal of hazardous materials, implementing integrated pest management and landscape management practices that would reduce the use of hazardous chemicals and would increase the use of alternative chemicals and processes. Therefore, compliance with the

VA SSPP and the acquisition and/or maintenance of the appropriate permits from agencies (such as a Hazardous Material Registration, Hazardous Materials Certificate of Registration, and Large Quantity Generator permit for medical waste from the San Francisco Department of Public Health, Hazardous Materials Unified Program Agency (HMUPA) for the operation of Alternative 1 short-term projects would ensure that impacts associated with hazardous waste generation would be minor.

Article 5, Land Resources

Section 30240 Environmentally sensitive habitat areas; adjacent developments. (a) Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas. (b) Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas. (Amended by Ch. 285, Stats. 1991.)

Analysis and Comment: No creeks, wetlands, or open water bodies are located on or near the existing SFVAMC Fort Miley Campus. Habitat within the Campus is largely developed and consists of landscaped and planted trees; however, the areas along the northern, eastern, and western perimeters of the Campus property are less developed. The vegetation assemblages, observed on the property in 2008 and 2012 by AECOM staff, are primarily nonnative. Remnant coastal scrub habitat is present in the northern undeveloped area of the Campus. Serpentine-derived soils or outcrops, chaparral, coastal scrub, sand dunes, wetlands, and native grasslands have not been observed on the remainder of the Campus, although some of these habitats historically have existed on the Campus.

Section 30244 Archaeological or paleontological resources. Where development would adversely impact archaeological or paleontological resources as identified by the State Historic Preservation Officer, reasonable mitigation measures shall be required.

Analysis and Comment: The existing SFVAMC Fort Miley Campus is underlain by artificial fill, dune sand, and the geologic formation known as the Franciscan Assemblage. Because of the young age of the artificial fill and dune sand, and the way in which the Franciscan Assemblage was formed, they are considered to be of low paleontological sensitivity. Furthermore, the result of a records search at the University of California Museum of Paleontology (UCMP) indicated that no fossils have been recovered from areas beneath the Campus. Therefore, construction activities would have minor impact.

Archival research demonstrates that no prehistoric or historic-era archaeological sites, features, artifacts, or human remains have been documented within the existing SFVAMC Fort Miley Campus. Therefore, construction activities at the Campus would have no direct or indirect impact to presently documented archaeological resources and human remains.

If an inadvertent discovery of cultural materials (e.g., unusual amounts of shell, animal bone, bottle glass, ceramics, structure/building remains) or human remains was made during project-related construction activities, ground disturbances in the area of the find would be halted and a qualified professional archaeologist would be notified regarding the discovery. The archaeologist would determine whether the resource was potentially significant as per the National Register of Historic Places (NRHP) and would develop appropriate mitigation. If human remains were encountered, the San Francisco County Coroner would be notified immediately on their discovery. If the Coroner determined that they were of Native American origin, the provisions of the Native American Graves Protection and Repatriation Act (NAGPRA) would apply **[EIS Mitigation Measure CR-1]**.

The Campus includes the SFVAMC Historic District and is adjacent to the Fort Miley Historic District. Implementing the LRDP would result in a direct adverse impact to the SFVAMC Historic District because of the incremental impairment of the integrity of materials, design, feeling, and setting of the Historic District that would result from buildout of all phases.

VA will ensure that any alteration or renovation of buildings that would occur in the SFVAMC Historic District would conform to the Secretary of the Interior's Standards for Rehabilitation to minimize any physical alterations to the buildings' structure and appearance that may compromise their integrity and status as an eligible resource. New construction that would alter the setting of the SFVAMC Historic District also would take the Secretary's Standards into consideration. Treatment or design guidelines for the SFVAMC Historic District may be necessary to ensure that these standards are customized to reflect the historical character of the Historic District. (This mitigation measure would be updated to reflect the consultation with State Historic Preservation Officer (SHPO) and consulting parties taking place under Section 106 of the National Historic Preservation Act of 1966 (NHPA) **[EIS Mitigation Measure CR-2]**). Adherence to the Secretary of the Interior's Standards for the Treatment of Historic Properties (Rehabilitation) to Reduce Impacts on the SFVAMC Historic District (implementation of **EIS Mitigation Measure CR-2**) would help reduce the severity of impacts of Alternative 1 short-term projects on the SFVAMC Historic District; however, the impact would remain adverse because project construction would still result in demolition of contributors and increased densification of the SFVAMC Historic District.

Article 6, Development

Section 30250: Location; existing developed area. (a) New residential, commercial, or industrial development, except as otherwise provided in this division, shall be located within, contiguous with, or in close proximity to, existing developed areas able to accommodate it or, where such areas are not able to accommodate it, in other areas with adequate public services and where it will not have significant adverse effects, either individually or cumulatively, on coastal resources. In addition, land divisions, other than leases for agricultural uses, outside existing developed areas shall be permitted only where 50 percent of the usable parcels in the area have been developed and the created parcels would be no smaller than the average size of surrounding parcels.

Analysis and Comment: The project would be located within the development footprint of the existing SCVAMC Fort Miley Campus, primarily on impervious sites (i.e., existing paved parking areas and buildings). The LRDP is consistent with this section.

Section 30251: Scenic and visual qualities. The scenic and visual qualities of coastal areas shall be considered and protected as a resource of public importance. Permitted development shall be sited and designed to protect views to and along the ocean and scenic coastal areas, to minimize the alteration of natural land forms, to be visually compatible with the character of surrounding areas, and, where feasible, to restore and enhance visual quality in visually degraded areas. New development in highly scenic areas such as those designated in the

California Coastline Preservation and Recreation Plan prepared by the Department of Parks and Recreation and by local government shall be subordinate to the character of its setting.

Analysis and Comment: The project would be located within the development footprint of the existing SCVAMC Fort Miley Campus, and none of the proposed structures would exceed the height of Building 2, which is the tallest existing building on the Campus.

Conventional BMPs related to screening of construction staging areas would be implemented during construction, to limit the frequency and prominence of views of construction equipment and materials. This would be a minor impact. Some of the structures proposed for Alternatives 1, 2, and 3 (Phase 1) would be located in relatively central areas of the Campus, which is not as visible from outside the Campus boundaries as areas along the perimeter. Buildings proposed in central portions of the Campus generally would not be visually dominant relative to existing buildings in that part of the Campus, because several of the existing structures are larger than the proposed structures. In addition, views of these new buildings from outside the Campus would be mostly screened from view by existing buildings, and/or would be set back sufficiently from the Campus boundaries to render them visually subordinate to other visible features. Therefore, buildings proposed for the central areas of the Campus would have a minor visual impact to views and would minimally affect the visual character of the Campus.

Buildings proposed as part of Phase 1 for both Alternatives 1, 2, and 3 for the eastern portion of the existing SFVAMC Fort Miley Campus would be intermittently visible in views from East Fort Miley. Although noticeable from GGNRA lands, the proposed new buildings in the eastern portion of the site would not be inconsistent with the character or scale of existing buildings in this area of the Campus, and they would be visible only intermittently through the heavy vegetation along the East Fort Miley and Campus boundary. New buildings proposed for the western portion of the Campus would not be visible from outside the Campus because they would be obscured by existing buildings, dense vegetation, or other landforms.

For Alternatives 1 and 2 (Phase 2), the massing of the proposed Clinical Addition Building (Building 213) would be visible from various publicly accessible locations on GGNRA lands north and east of the existing SFVAMC Fort Miley Campus, resulting in an alteration of the physical surroundings experienced by visitors to that area. Although this proposed multistory building would be visible to hikers from the trail along El Camino del Mar, the location is not a focal or prime destination for hikers; this is generally an area that people pass through on their way to more scenic GGNRA locations with more expansive views that include views of the Golden Gate Bridge and Marin Headlands. Most hiking trails are downslope of the Campus at a lower elevation and views of new buildings would only be noticeable from certain vantage points when the observer is looking upward toward the Campus. The proposed new building would be built with materials, colors, and massing that would be designed to fit with the context of existing buildings of the SFVAMC Fort Miley Campus, including the historic district, thereby minimizing its visual impact. In addition, vegetation currently screens portions of these views. Trees would be removed for construction associated with Buildings 24 and 203, and such tree removal; however, project implementation would result in the planting of trees along the perimeter of the Campus, which would further screen views of the proposed new buildings from the trail along El Camino del Mar and from more distant views such as those from the Marin Headlands and the Presidio. The effect of these proposed development changes to the Campus would be considered a minor impact.

Section 30252 Maintenance and enhancement of public access. The location and amount of new development should maintain and enhance public access to the coast by (1) facilitating the provision or extension of transit service, (2) providing commercial facilities within or adjoining residential development or in other areas that will minimize the use of coastal access roads, (3) providing non-automobile circulation within the development, (4) providing adequate parking facilities or providing substitute means of serving the development with public transportation, (5) assuring the potential for public transit for high intensity uses such as high-rise office buildings, and by (6) assuring that the recreational needs of new residents will not overload nearby coastal recreation areas by correlating the amount of development with local park acquisition and development plans with the provision of onsite recreational facilities to serve the new development.

Analysis and Comment: Based on the ridership totals, sufficient capacity would be available on transit services in the Geary Boulevard corridor (38 Geary, 38L Geary Limited, 38AX Geary “A” Express, and 38BX Geary “B” Express) to accommodate the transit demand of the project, which would generate the majority of its new ridership in the less-crowded “reverse commute” direction.

The project would improve sidewalks and walkways for pedestrians, and would provide improved connectivity across the Campus. Four major citywide bicycle routes consisting of Class I and Class III bikeways are situated in the vicinity of the existing SFVAMC Fort Miley Campus. Class I bicycle facilities are paved off-street paths, and Class III bicycle facilities are signed routes only, where bicyclists share travel lanes with vehicles. The expected increase in bicycle trips that would occur with implementation of the project would not be substantial enough to affect overall bicycle circulation in the area or the operations of adjacent bicycle facilities.

Parking demand generated by construction workers’ personal vehicles is expected to be accommodated by existing parking facilities within the existing SFVAMC Fort Miley Campus. A valet parking system has been in place in the parking structures during construction and operation of the SFVAMC over the past couple of years which has assisted with overflow situations. Should parking constraints become an issue, a variety of measures are available at the disposal of SFVAMC and its contractors to minimize traffic and parking effects during construction activities, such as using a vanpool service to connect the construction site with transit stations and off-site parking facilities. For example, VA has leased offsite parking spaces through the NPS for limited temporary construction periods and provided shuttles to SFVAMC. Any offsite parking locations would be at existing parking lots and would not impact public access to parking or impact use of parklands or other adjacent land uses. Overall, construction-related parking demand would be short-term and temporary, and impacts would be minor.

Alternatives 1, 2, and 3 (Phase 1) would result in a long-term parking demand of an estimated 132 spaces during the weekday peak period. As part of Phase 1, 321 existing parking spaces would be eliminated and replaced by the construction of 627 new parking spaces as part of the proposed Emergency Operations Center, and Buildings 211 and 209 extensions, for a net addition of 306 spaces by the year 2020.

Alternatives 1 and 2 (Phase 2) would not include any additional parking facilities beyond the net addition of 306 spaces proposed under Phase 1. The net addition of 306 spaces would not meet the parking demand under Phase 2 conditions in 2027, for Alternative 1 or 2 Parking generally is not considered part of the permanent physical environment, with supply and demand highly variable and dependent on many different factors. The absence of a ready supply of parking spaces, combined with available alternatives to auto travel (e.g., transit services, taxis, bicycles, or travel by foot) and a relatively dense pattern of urban development, induces many drivers to seek and find alternative parking facilities, shift to other modes of travel, or change their overall travel habits. Any such resulting shifts to transit service in particular would be consistent with the City of San Francisco's "Transit First" policy.

Operation of the project would result in new and additional medical and medical office space to accommodate existing medical needs. No permanent housing component is proposed; therefore, the area's population density would not be affected directly. However, Alternatives 1 and 2 would increase the number of personnel at the existing SFVAMC Fort Miley Campus by 642 (an 18 percent increase) between 2013 and 2020 and 616 (a 15 percent increase) between late 2020 and 2027. Some of these people might use adjacent Fort Miley within the GGNRA (e.g., personnel visiting a local park on their lunch breaks), but this additional usage is not expected to result in a substantial increase in demand for nearby recreational facilities. Furthermore, these employees would have lunch breaks at different times (because they would work various shifts), and only a fraction of daytime employees potentially would use park grounds for lunch or before or after work. The use of nearby recreational spaces by Campus employees is expected to be limited to weekday lunch hours, when resident usage may be lower than during the evening and weekend hours. Visitors and patients are not expected to use nearby parks because their visits to the Campus would be focused on healthcare services. Finally, because open space amenities would be provided as part of the project, access to on-site open space is expected to help offset any potential deterioration of nearby parks caused by Campus personnel, patients and visitors. For the reasons stated above, this impact would be minor.

Section 30253: Minimization of adverse impacts. New development shall do all of the following:

(a) Minimize risks to life and property in areas of high geologic, flood, and fire hazard.

(b) Assure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area or in any way require the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs.

(e) Where appropriate, protect special communities and neighborhoods that, because of their unique characteristics, are popular visitor destination points for recreational uses.

(Amended by Ch. 179, Stats. 2008)

Analysis and Comment:

<u>Flood Hazard</u>

According to both the City and County of San Francisco's Interim Floodplain Maps and the Federal Emergency Management Agency's (FEMA) preliminary Flood Insurance Rate Map (FIRM), the existing SFVAMC Fort Miley Campus is not located within a flood hazard area. The elevation of the Campus ranges from 300 to 350 feet relative to mean sea level (msl), and the Campus is located approximately 1,000 feet (0.2 miles) from the nearest shoreline at its closest point. However, the total or peak runoff volume from the Campus could increase as a result of the project and would contribute to downstream flooding. The SFVAMC would be required to comply with Section 438 of the Energy Independence and Security Act (EISA) and implement LID techniques (e.g., bio-retention areas, permeable pavements, cisterns/recycling, and green roofs) to mimic predevelopment stormwater runoff conditions by using site design techniques that would store, infiltrate, evaporate, and detain runoff. The SFVAMC also would be required to comply with Article 4.2 of the San Francisco Public Works Code, which requires submittal of a stormwater control plan that meets SFPUC guidelines. For compliance with Article 4.2, the stormwater runoff rate and volume from the portion of the project site that drains to the combined sewer would be required to decrease by 25 percent from the 2-year, 24-hour design storm. Submittal and implementation of final drainage plans would ensure proper sizing of infrastructure to handle stormwater and wastewater flows, to protect from downgradient flooding hazards that could affect the coastal zone **[EIS Mitigation Measure HYD-1]**.

Fire Hazard

Certain construction equipment, materials, and activities, such as welding, may increase the risk of fire on the SFVAMC Fort Miley Campus during construction of Alternative 1 short-term projects. This would be a potentially adverse impact. However, in accordance with VHA Specification Section 010000, "General Requirements," the construction contractor would be required to prepare a fire safety plan (prepared in accordance with Title 29 Code of Federal Regulations Part 1926) before the initiation of work. The plan would provide detailed, project-specific fire safety measures. In addition, all workers would be required to undergo a safety briefing, in accordance with Occupational Safety and Health Administration requirements. Compliance with the Fire Safety Plan and safety measures conveyed at the worker safety briefing would ensure that the potential impacts associated with fire during construction would be minor.

The SFVAMC Fort Miley Campus is located in an urbanized area with no or low wildland fire threat, according to the California Department of Forestry and Fire Protection. The project would operate on the Campus and would maintain existing urbanized land uses; therefore, the wildland fire threat would not increase.

General Hazard

Furthermore, to ensure public safety, the SFVAMC establishes and regularly updates hazards emergency protocols in its All-Hazards Emergency Operations Plan. This emergency operations plan identifies an organized process to initiate, manage, and recover from various types of emergencies that may potentially occur at the SFVAMC Fort Miley Campus. The plan also addresses emergency situations related to fire, hazardous materials/radiological/decontamination, utilities, bomb threats, behavioral emergencies, external emergencies, earthquakes, national disaster medical systems, VA/U.S. Department of Defense contingency hospitals, the national response framework, medical equipment, an infectious diseases/pandemic influx, a 96-hour plan, and medical surges. This emergency operations plan also includes detailed emergency operations procedures for staff and departmental response and communication, recovery procedures, communication procedures, resource and asset management, and security and safety operations. Through continued compliance with the SFVAMC's All-Hazards Emergency Operations Plan at the Campus, impacts associated with hazards and public safety would be minor.

Geologic Hazard

The San Francisco Bay Area is located in a seismically active region. The SFVAMC Fort Miley Campus lies within a region of active faulting and high seismicity, associated with the San Andreas Fault system. The San

Andreas Fault lies approximately 3.5 miles southwest of the Campus at its closest point. Several other active and potentially active faults occur within the project limits: the San Gregorio, Hayward, Point Reyes, Rodgers Creek, Calaveras, and others. The majority of Campus structures are more than 75 years old. Alternatives 1, 2, and 3 (Phase 1) projects, as well as Alternative 2 (Phase 2) projects, would involve seismic, structural, mechanical, and electrical reconstruction activities that would have a long-term beneficial effect on public safety by structurally stabilizing deteriorating buildings and infrastructure.

The SFVAMC Fort Miley Campus is not located within an area that is mapped as a liquefaction hazard zone. Lateral spreading is unlikely because no liquefaction hazard is present at the Campus. The Campus is not located within a designated landslide hazard zone, and no evidence of landslides was observed during a previous investigation.

An engineering geologic hazards (geotechnical investigation) and site-specific ground response report would be required for the Critical and Essential Facilities proposed as part of the project. Consequently, design and construction of the proposed facilities would address seismically induced ground shaking and associated ground failure, through engineering and design recommendations for the proposed facilities. Furthermore, a geotechnical contractor would review the project plans and specifications before construction, to check their conformance with the recommendations of the geotechnical reports. Therefore, because the facilities would be designed and constructed to meet VA's seismic design requirements, operation of the facilities constructed as part of the project would result in a minor impact related to seismically induced ground shaking and associated ground failure.

Native soil on the existing SFVAMC Fort Miley Campus has been found to be moderately to highly expansive. Consequently, design and construction of the proposed facilities would address any potential expansive or corrosive soils, through engineering and design recommendations for the proposed facilities. Furthermore, a geotechnical contractor would review the project plans and specifications before construction to check their conformance with the recommendations of geotechnical reports. Therefore, a minor impact related to expansive or corrosive soils would result from facility operation.

To minimize potential erosion and associated water quality degradation during construction, the SFVAMC would be required to comply with Article 4.1 of the San Francisco Public Works Code, which regulates the quantity and quality of discharges to the combined sewer system. These requirements include controlling sediments and erosion and implementing BMPs for construction materials and waste management and handling. In addition, a SWPPP would be prepared to reduce pollution of surface water throughout the project's construction period. The SWPPP would include specific and detailed BMPs, designed to reduce the amount of sediment and other construction-related pollutants in discharges associated with construction activities.

For the northern portion of the site, which drains to a separate storm system, the SFVAMC would obtain coverage under the Construction General Permit (SWRCB Order 2009-0009-DWQ, as amended by 2010-0014-DWQ and 2012-0006-DWQ), which requires the development and implementation of a SWPPP.

Potential construction impacts also would be minimized by implementing the requirements for protection of land resources, outlined in VA Specification Section 015719, "Temporary Environmental Controls." These include requirements such as setting work area limits, protecting the landscape, reducing exposure of unprotected soils, protecting disturbed areas, installing erosion and sediment-control devices, managing spoil areas, and following good housekeeping procedures.

(c) Be consistent with requirements imposed by an air pollution control district or the State Air Resources Board as to each particular development.

Based on modeling performed by AECOM (2014), direct, short-term, construction-related emissions of criteria pollutants would be substantially less than the significance thresholds, and the direct impact to regional air quality would be minor. In an effort to reduce the effects of construction at VA facilities on the environment, VA requires that temporary environmental controls be employed during construction activities and enumerated as part of construction specifications (VA Specification Section 015719). These controls typically include actions related to the control of air pollutant emissions. Based on additional modeling performed by AECOM (2014), toxic air contaminants (TACs) and particulate matter ($PM_{2.5}$) emissions generated during construction would result in a minor direct impact with respect to health risks and no indirect impacts would occur.

Asbestos and lead-based paint are expected to be present in each of the structures to be demolished, and they would be abated per VA Specification Sections 028333.13, “Lead-Based Paint Removal and Disposal,” and 028213.41, “Asbestos Abatement for Total Demolition Projects.”

Short-term area- and mobile-source emissions were modeled using CalEEMod (AECOM, 2014), and short-term operational emissions of criteria pollutants would be substantially lower than the de minimis thresholds. Therefore, the direct impact to regional air quality of operational emissions of criteria pollutants would be minor.

Implementation of the project would not increase short-term (2020) traffic volumes in the vicinity of the existing SFVAMC Fort Miley Campus to 44,000 vehicles per hour, the carbon monoxide (CO) hotspot screening level that has been recommended by Bay Area Air Quality Management District (BAAQMD) and that evaluates a project’s relative level of compliance with national ambient air quality standards (NAAQS)and California ambient air quality standards (CAAQS), and no horizontal or vertical restrictions exist in the area that would trap CO and limit mixing. Therefore, receptors in the vicinity of the project would not be directly adversely affected by operation of the project. Impacts from localized CO emissions would be minor.

The Campus is not located near any high-volume roadways (i.e., 100,000 vehicles per day within a 150-meter radius if the SFVAMC site), and daily delivery truck trips to the Campus average approximately two per day. This number could potentially increase in the near term, relative to current conditions, but not substantially. Therefore, localized TAC and PM emissions from both on-site and off-site mobile sources would not directly adversely affect sensitive receptors either on-site (patients) or off-site (residents).

No permitted sources of TACs operate near the existing SFVAMC Fort Miley Campus, outside of the Campus itself. It is unknown whether the project would include any new permitted sources of TACs, such as incinerators, fume hoods, sterilizers, or backup diesel generators, but such a source would require a permit and best available control technology for toxics (T-BACT) to ensure that the patients and the neighboring community would not be adversely affected. Therefore, the operational impacts of TAC and $PM_{2.5}$ emissions from stationary sources would not adversely affect sensitive receptors. Impacts would be minor.

(d) Minimize energy consumption and vehicle miles traveled.

Although the project would involve expanding the existing SFVAMC Fort Miley Campus, the overall energy efficiency likely would improve with the decommissioning, demolition, and replacement of older, energy-intensive buildings. Consistent with the VA SSPP, SFVAMC would incorporate physical features and operational measures that would sustain and improve environmental efficiencies through a sustainable design master plan, to achieve a 30 percent reduction in greenhouse gas emissions by 2020. The improvements in the Sustainable Design Master Plan would include consideration of stand-alone technologies, such as installing photovoltaic panels on the roofs of new and/or existing buildings, as partial shades over windows or in open land areas as a method of providing building electrical power on-site.

The SFVAMC Fort Miley Campus currently contracts with a major transportation service to provide free bus and shuttle service to staff and patients daily. The service operates between the Campus and major transportation hubs in San Francisco, from 5:00 a.m. to 9:00 a.m. and again from 2:30 p.m. to 6:30 p.m. More than 200 staff and patients utilize this service daily. In addition, San Francisco Municipal Transportation Agency (SFMTA or Muni) Lines 38-Geary, 38L-Geary Limited, and 38AX-Geary A Express operate in the vicinity of the Campus. The Campus would continue to experience multimodal access and circulation, including passenger vehicles, buses, shuttle vans, delivery vehicles, emergency medical and fire vehicles, and pedestrians. Therefore, a reduction would occur in vehicle miles traveled.

Section 30254: Public works facilities. New or expanded public works facilities shall be designed and limited to accommodate needs generated by development or uses permitted consistent with the provisions of this division; provided, however, that it is the intent of the Legislature that State Highway Route 1 in rural areas of the coastal zone remain a scenic two-lane road. Special districts shall not be formed or expanded except where assessment for, and provision of, the service would not induce new development inconsistent with this division. Where existing or planned public works facilities can accommodate only a limited amount of new development, services to coastal dependent land use, essential public services and basic industries vital to the economic health of the region, state, or nation, public recreation, commercial recreation, and visitor-serving land uses shall not be precluded by other development.

Analysis and Comment: Implementation of the LRDP would not require an expansion of the existing water utility system for water treatment or wastewater treatment. The VA SSPP establishes water conservation goals for VA facilities to be achieved by 2020. Specifically, the VA SSPP states that VA facilities have a potable-water reduction target of 26 percent by 2020, as compared to the base year (2007), and an industrial and landscaping water use reduction target of 20 percent by 2020, as compared to the base year (2010). SFVAMC has committed to a 30 percent reduction target that exceeds the goal established in the VA SSPP. The estimated increase in water demand and wastewater generation with implementation of the project would not require expansion of water treatment facilities. In addition, the SFPUC has confirmed that the growth projections used in the SFPUC’s 2010 Urban Water Management Plan (UWMP) included implementation of the project; regardless of whether the SFVAMC implements the VA SSPP’s reduction target, SFPUC would be able to accommodate the project water demands.

Several utility lines serving the existing SFVAMC Fort Miley Campus are located within the footprint of the project components. These lines would be relocated as necessary before construction of the project components, to prevent interruption of service during construction. To accomplish this, project engineers would prepare and implement a plan to provide alternate service to these buildings before demolition and during construction. Utilities to be relocated would include domestic water, fire suppression water, and combined storm/sanitary sewer lines, underground electric, natural gas, and compressed air lines.

Although the project would expand the existing SFVAMC Fort Miley Campus, the overall energy efficiency likely would improve with the decommissioning, demolition, and replacement of older, energy-intensive buildings. Consistent with the VA SSPP, as stated above, SFVAMC would incorporate physical features and operational measures that would sustain and improve environmental efficiencies through a sustainable design master plan, to achieve a 15 percent reduction in greenhouse gas emissions by 2015 (29.6 percent reduction by 2020). Existing electricity and natural gas infrastructure capacity is considered adequate to accommodate the anticipated demand at the Campus. Should on-site improvements and connections be required, such improvements would be coordinated with PG&E during the continued planning of the project components, so that the construction and operation of new electric and natural gas distribution lines would be completed in compliance with federal, State, and local regulatory requirements, minimizing the potential for adverse impacts.

Section 30254.5: Terms or conditions on sewage treatment plant development; prohibition. Notwithstanding any other provision of law, the commission may not impose any term or condition on the development of any sewage treatment plant which is applicable to any future development that the commission finds can be accommodated by that plant consistent with this division. Nothing in this section modifies the provisions and requirements of Sections 30254 and 30412. (Added by Ch. 978, Stats. 1984.)

Analysis and Comment: Implementation of the LRDP would not require an expansion of existing wastewater treatment facilities at the Oceanside Water Pollution Control Plant or construction of a new wastewater treatment plant. The SFVAMC Fort Miley Campus is located within the service area of the City of San Francisco's combined sewer system; therefore, both domestic wastewater and stormwater flow into the sewers. The sanitary sewer system at the Campus collects and conveys wastewater from building lateral connections to the site's combined sewer system and eventually to SFPUC's combined sewer interceptor on Clement Street. This method of discharge generally would continue with implementation of the project. Stormwater design would incorporate LID techniques to maintain the site's predevelopment stormwater discharge rates and volumes by using design techniques that would infiltrate, filter, store, evaporate, and detain runoff close to the source, such as green roofs and bioswales, as well as energy dissipaters to prevent concentrated flows. Landscaping and LID practices would be incorporated as part of building design and would provide improved ground/soil absorption of runoff. The use of energy dissipaters to prevent concentrated flows also would minimize the impact of stormwater flows.

The VA SSPP establishes water conservation goals for VA facilities to be achieved by 2020. Specifically, the VA SSPP states that VA facilities have a potable-water reduction target of 26 percent by 2020, as compared to the base year (2007), and an industrial and landscaping water use reduction target of 20 percent by 2020, as compared to the base year (2010). SFVAMC has committed to a 30 percent reduction target that exceeds the goal established in the VA SSPP. The estimated increase in water demand and associated wastewater generation with implementation of the project would not require expansion of wastewater treatment facilities.

Section 30255: Priority of coastal-dependent developments. Coastal-dependent developments shall have priority over other developments on or near the shoreline. Except as provided elsewhere in this division, coastal-dependent developments shall not be sited in a wetland. When appropriate, coastal-related developments should be accommodated within reasonable proximity to the coastal-dependent uses they support. (Amended by Ch. 1090, Stats. 1979.)

Analysis and Comment: The SFVAMC Fort Miley Campus is located adjacent to the Point Lobos bluff at an elevation of 300 to 350 feet relative to msl. The land to the north and west of the site drops sharply downward toward the Pacific Ocean, while the terrain to the east slopes more gently. However, the Campus is not located on the shoreline; the Campus is approximately 1,000 feet (0.2 miles) from the nearest shoreline at its closest point. The Campus has been at its present location since 1934, and the project would be constructed on its existing 29 acres, within a reasonable location adjacent to the same type of medical uses. This location allows patients and visitors to enjoy the views and vistas of the Pacific Ocean and portions of the City that support the healing process.